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South Dakota -- Commissioner of labor statistics.

Biennial report ... 1893-94

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BIENNIAL REPORT

OF THE

COMMISSIONER OF LABOR STATISTICS

FOR THE

State of South Dakota,

TO THE

GOVERNOR OF SOUTH DAKOTA,

For the Years 1893 and 1894.

1894:
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BIENNIAL REPORT

OF THE

COMMISSIONER OF LABOR STATISTICS

FOR THE

STATE OF SOUTH DAKOTA,

1893-94.

To His Excellency, Charles H. Sheldon, Governor of the State of South Dakota:

In accordance with the requirements of the statute, I beg leave to report to you that I have collected, during the past two years, statistics covering the different departments of labor and in relation to commercial, industrial and social conditions of the people, as well as the productive industries of this state. These statistics I now present to you, analyzed and assorted, as by law required.

In many cases the details of information will be found to be few in number, but I wish to assure you that this is not for want of due effort on the part of this bureau, but from a failure on the part of the people of the state, from whom, alone, the information is to be had, to respond to calls upon them for it. As an illustration of this failure on the part of the people to reply to calls for information, I will state that I sent to over four thousand farmers of this state printed blanks containing a list of questions to be answered, and with each blank an envelope, addressed and stamped, in which to return the same; but out of this number only 417 responded in time to use the information in this report. This is a difficulty, however, met with in all the states. Carrol D. Wright, Labor Commissioner of the United States, in an address before the American Social Science Association in 1888, discussing this question, said:

> "The methods now open to them (the Bureaus of Labor Statistics) are the same, of course, that are open to all statistical officers, devoted in any way or to any extent to original investigations. There are three such methods: First, the method of securing information by the use of uniform schedules or blanks, sent to parties from whom facts are expected. Second, through public hearings. Third, through the efforts of special agents, using prescribed forms of inquiry for the purpose of securing uniform information and for facilitating tabulation, etc. The first method named

> has been proven to be of little use in the past, except under most favorable conditions. * * * The second is that adopted by Legislative Committees, and as a rule simply results in bringing together a mass of incongruous statements not easily classified, and in many instances utterly incapable of classification. * * * The best practical, and, therefore, the most useful method of securing information is the employment of special agents or experts to make personal calls upon parties from whom information is desired. The experience of nineteen years proves this to be the most trustworthy method open to the Bureaus."

These remarks, made in 1888, are equally applicable now. The appropriation of the Legislature for this bureau contemplates the collection of these statistics by the first method mentioned by Mr. Wright, and is, of course, wholly inadequate to collect them by special agents. Consequently I have confined my efforts in the collecting of information to the methods contemplated by the statute; and, besides this, have engaged personally in the work a great part of the time, often visiting, for this purpose, the different sections of the state. The work, however, has been pursued with difficulty, as many people are reluctant to impart the information sought, some regarding the inquiries as trespassing upon the domain of private affairs, others fearing the collection and publication of the information would be to the disadvantage of the community and benefit speculators and adventurers only. The feeling of depression in the state, caused by the unfavorable results of agricultural operations of the past year, has also contributed in a large degree to prevent the successful operation of the bureau for this year. However, these causes are temporary, and, even with present methods, will disappear in time. As a means of enlarging the usefulness of these bureaus, at the meeting of the national convention of labor commissioners and chiefs held at Denver in May, 1892, the following resolution was adopted, viz:

> "*Resolved,* That the Commissioners of Labor of the different states recommend to the Legislatures of the different states the consideration of the advisability of creating free public employment offices under state control and supervision."

In connection with this resolution it is stated that:

> "Such plan has been in successful operation in Ohio during the past two or three years and proves of very great value. In nearly all the states where there are many laborers, private employment agencies spring up, offering for a consideration to find employment for the idle laborers. In the main, such agencies are simply swindling concerns that prey upon the credulity of the laborer, whose money once received no effort is made to find employment."

To this might be added the fact that some of these agencies resort to means the most nefarious to make gain out of the needy laborer often leaving him in a condition of want that must be relieved by the agencies of the state. For instance it is stated that in the larger cities of the east these concerns often advertise for large numbers of men to work on a railroad, say in South Dakota, and on being applied to charge them $1 each for procuring the employment. They then write to some contractor or sub-contractor stating that they have these men to a certain number, say 500, that they get a dollar apiece for getting them employment, and that if the contractor or sub-contractor will give them employment that they will divide the fee with them, advising them at the same time that if they will soon thereafter discharge the men that a fresh lot will be sent on the

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same terms. So it happens that the needy laborer is taken from his home, sent to the distant point, and after a few days of employment finds himself out of work, and out of money, and among strangers. I submit this matter for your consideration and such action as you may deem advisable in the premises.

FARMERS' REPORTS.

The following table presents the returns from the farmers of thirty-four counties of the state, and shows their condition with reference to such economic questions as were asked of them for the year 1893, and the information therein set forth is instructive as well as gratifying in some instances. For example, it will be noticed that out of 290 answers to the question of ownership of the farms on which they live, 274 reply that they own the farms they live on, while but 7 rent, and 13 do not answer. The highest average value of farms is in Yankton county, being returned as $9,000 each. The next highest is in Brown, while the lowest is in Pennington county. But it will be noticed that the average of $1,000 each, for that county, is based on but two returns, and it is probable that fuller returns would have increased this average, as there are many valuable farms in that county. The highest average in families is, according to the returns in Lake county, where 6 returns give an average of 7½ to the family; and the lowest, in Clark and Douglas counties, where 3 returns from the former county and 2 from the latter, give the average at 3½ to the family. In Lake county there are but 6 returns, and it seems certain that the returns from these counties are too few to make these averages reliable. From Brown county there are 16 returns, and the average number in families there, as shown by the returns, is 4 7-13. From Deuel county there are 15 returns and the average there is 6 4-14. From Hamlin county there are 21 returns and the average there is 6 1-13; and it is probable that the latter figures are much nearer the truth and that in none of the counties returned that the average goes below 4 or above 7 to the family.

The largest average number of acres to the farm under cultivation comes from Spink county, where 12 returns show that the average to the farm is 384 acres. Next comes Brown county, where 16 returns give the average as 350 acres. The lowest is from Custer county, where the returns show the average to be but 36 acres. But the latter county is in the Black Hills, and can hardly be classed as a farming county. The main point of interest in this table is the large average number of acres under cultivation to each farm in the farming counties of the state, and this fact, taken with the well-known possibilities of the soil in those counties, highly emphasizes other questions with which I shall deal in this report, and which will come up for discussion in their proper order. Passing on to the other items in this table, I will say that I undertook to gather information as to the number of farm hands employed in the state, as well as their average pay by the day and the month and the time employed. As to the number employed, the replies were too meager to tabulate. The average pay by the month and day is given, as well as the average time employed. From the table it will be seen that farm hands receive the highest pay by the year in Butte county, which would be natural, as the farming operations in that county are chiefly conducted with irrigation, are highly successful and the farmers have the best of home markets for everything produced in the contiguous mining regions of the Black Hills. The lowest pay received by farm hands by the year, as shown by the returns, is in Brown county, one of the finest agricultural counties of the state, but where the reverse of the conditions in Butte county obtain, the former having irrigation, the latter not having it. The wages of farm hands by the day are chiefly those employed during harvest, and the returns indicate that farmers employ but little help by the day at other times.

FARM REPORTS—ECONOMIC, 1893.

COUNTIES.	Number of Reports Received.	Number Owning Farms.	Number Renting Farms.	Average Value of the Farms.	Average Number in Family.	Average Number of Acres Cultivated.	Average Pay of Farm Hands Per Month.	Average Pay of Farm Hands Per Day.	Average Time in Year Employed.
Aurora	13	10	3	$1,864 00	5 1-2	78	$20 00	$1 25	1 m
Buffalo	12	11	1	2,111 00	4 11-12	78	20 00	--------	8 m
Brown	16	13	*	8,633 00	4 7-13	350	16 00	1 90	12 m
Butte	12	11	*	3,290 00	4 7-10	50	27 00	1 25	8 m
Campbell	18	18	None	2,106 00	4 6-14	118	23 00	1 50	8 m
Custer	10	7	..	1,688 00	4 5-7	36	22 00	*	8 m
Charles Mix	9	9	..	4,444 00	5 1-8	135	20 00	1 00	4½ m
Clark	3	3	..	3,233 00	3 1-2	175	21 00	1 50	7 m
Clay	13	13	..	7,498 00	5 9-11	152	20 00	1 00	9 m
Codington	12	10	1	4,850 00	5 2-11	278	21 00	1 00	7 m
Davison	7	7	None	7,928 00	5 2-7	286	21 00	--------	9 m
Douglas	2	2	..	1,600 00	3 1-2	50	--------	1 25	--------
Deuel	15	13	..	4,992 00	6 4-14	204	22 00	--------	7 m
Edmunds	3	3	*	2,500 00	6 1-3	276	--------	1 50	--------
Fall River	4	4	None	1,333 00	5	55	23 00	--------	12 m
Grant	9	7	..	6,042 00	4 1-2	240	20 00	1 50	7 m
Hand	8	8	..	2,457 00	5 6-7	167	20 00	1 00	6 m
Hamlin	21	21	1	4,050 00	6 1-3	215	23 00	1 50	7 m
Jerauld	4	3	*	3,100 00	4 1-4	140	--------	--------	--------
Kingsbury	7	7	None	6,757 00	6 1-7	170	22 00	1 50	6 m
Lake	6	6	..	4,766 00	7 1-2	220	18 00	1 50	9 m
Lawrence	11	10	..	4,300 00	4 7-9	105	25 00	1 00	10 m
Meade	8	8	..	4,925 00	4 4-7	106	25 00	1 00	7 m
Miner	10	10	..	3,710 00	4 1-10	203	22 00	1 50	10 m
Moody	2	2	..	*	4	267	23 00	1 50	10 m
McCook	8	8	..	7,288 00	5 7-8	238	22 00	1 50	8½ m
McPherson	10	10	..	2,744 00	5 1-3	196	21 00	--------	8 m
Pennington	2	2	..	1,000 00	6	40	--------	--------	--------
Roberts	5	5	..	2,060 00	4 1-2	169	22 00	1 50	7 m
Spink	12	12	..	5,633 00	5 1-2	384	22 00	1 75	8 m
Sanborn	9	8	1	3,285 00	4 1-3	137	18 00	1 00	4 m
Turner	4	4	None	3,375 00	5 1-4	152	20 00	1 50	9 m
Walworth	5	5	..	2,380 00	5 1-4	144	22 00	1 50	5½ m
Yankton	4	4	..	9,000 00	6 1-4	171	18 00	1 00	9 m

* No answer.
NOTE—The farm hands working by the day are chiefly harvest hands.

The following table presents the returns from the farmers of 25 counties of the state for 1894, and gives the same information for that year as the previous table gives for 1893.

FARM REPORTS—ECONOMIC, 1894.

COUNTIES.	Number of Reports Received.	Number Owning Farms.	Number Renting Farms.	Average Value of the Farms.	Average Number in Family.	Average Number of Acres Cultivated.	Average Pay of Farm Hands Per Month.	Average Pay of Farm Hands Per Day.	Average Time in Year Employed.
Aurora	8	8	-------	$1,440 00	5 1-8	101	$ 16 00	$ 1 00	4 m
Buffalo	4	3	-------	800 00	3 1-2	80	---------	--------	--------
Brookings	3	3	-------	1,100 00	7	280	20 00	--------	9 m
Brule	6	6	-------	1,383 00	8	136	15 00	1 00	8 m
Butte	3	3	-------	1,466 00	6 1-3	86	25 00	--------	6 m
Campbell	3	3	-------	1,566 00	4 2-3	120	22 50	1 00	7 m
Charles Mix	5	5	-------	1,500 00	3 2-5	114	18 00	75	6 m
Clay	6	6	-------	2,200 00	5 5-6	124	18 00	1 00	10 m
Codington	1	1	-------	2,000 00	7	160	---------	--------	--------
Davison	6	6	-------	1,560 00	6 1-5	361	18 00	--------	7 m
Day	2	2	-------	1,500 00	8	212	---------	--------	--------
Edmunds	2	1	-------	1,500 00	2	225	16 00	--------	8 m
Fall River	1	1	-------	800 00	9	50	---------	1 00	12 m
Grant	2	2	-------	2,000 00	5	247	19 00	--------	9 m
Lawrence	2	2	-------	2,500 00	3	43	25 00	--------	4 m
Meade	3	3	-------	1,500 00	4	60	25 00	--------	8 m
Miner	3	3	-------	3,133 00	6	113	15 00	--------	7 m
McCook	2	1	-------	500 00	4	130	* ------	--------	--------
Pennington	3	3	-------	800 00	5 1-2	26	* ------	1 00	6 m
Roberts	3	3	-------	1,566 00	4 2-3	193	* ------	--------	--------
Spink	4	4	-------	700 00	6 1-2	235	16 00	1 50	12 m
Sanborn	5	4	-------	1,550 00	5	199	17 50	--------	6 m
Turner	4	4	-------	2,550 00	6 1-4	157	16 00	--------	12 m
Walworth	2	2	-------	1,050 00	8 1-2	140	20 00	--------	6 m
Yankton	4	4	-------	9,650 00	4 1-4	163	22 50	--------	8 m

FARM MORTGAGES.

The following table is the result of the analysis of 292 returns for the year 1893, from farmers, relating to their condition with reference to mortgage indebtedness and shows that out of that number, 133, or 48 per cent., have mortgages on their farms. According to the returns from 113 farmers, made to my precedessor, Mr. Smith, 69 per cent. of them had mortgages on their farms. It is probable that there was considerable reduction in the number of farm mortgages by the good crop of 1892, but whether this is sufficient to account for the decrease in the percentage of mortgages from 69 to 48 I am unable to say. There are in this state over 50,000 farmers, according to the last census of the United States. These 292 returns are given by counties and will, therefore, show the area from which the information comes, on which this information is based, and leave the inquirer to his own deductions regarding the accuracy of the conclusions deduced therefrom.

My own conclusions are that the extent of the mortgage indebtedness of this state, as shown by these figures, is not far out of the way.

FARM MORTGAGES, 1893.

COUNTIES.	Number Reporting.	Number Farms Mortgaged.	Average of Mortgages.	Average Per Cent Rate of Interest.	Average Value of Farms Mortgaged.	Per Cent of Farms Mortgaged.	Average Per Cent of Value of Farms Mortgaged.	Number of Chattel Mortgages.	Average Size of Chattel Mortgages.	Reasons for Making Mortgages.
Aurora	13	1	$ 400 00	10	$ 1,000 00	7.6	40	2	* --------	Purchase money of farm.
Buffalo	12	6	335 00	9.60	3,175 00	50	10 1-2	11	$ 121 00	To get money to live on. To buy more stock. To buy horses. To get money to prove up. To get money to live on. To buy a horse.
Brown	16	7	788 00	9 3-8	8,016 00	43	.094	2	200 00	For improvements. To buy more land. General improvements. To buy tree claim and binder. To pay debts. To buy stock. Was mortgaged when I bought it.
Butte	12	5	1,630 00	10 1-3	6,266 00	.416	.244	3	* --------	To build barn. To buy stock, and expenses. To buy stock and implements. To buy stock and to improve. To buy more stock.
Campbell	18	7	280 00	9 1-7	1,300 00	.385	.212	4	120 00	To buy implements. To prove up. Failure of crop. To prove up and buy implements. To make final proof. To buy stock. Loss of crops.

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* No answer.

FARM MORTGAGES, 1893—*Continued.*

COUNTIES.	Number Reporting.	Number Farms Mortgaged.	Average of Mortgages.	Average Per Cent Rate of Interest.	Average Value of Farms Mortgaged.	Per Cent of Farms Mortgaged.	Average Per Cent of Value of Farms Mortgaged.	Number of Chattel Mortgages.	Average Size of Chattel Mortgages.	Reasons for Making Mortgages.
Custer	10	3	$ 423 00	8 1-3	$ 2,500 00	30	.169	2	$1,000 00	Improvements. Buy stock. Buy land.
Charles Mix	9	6	591 00	8 3-5	5,083 00	66	11	------	------	To buy land. To buy land. To sink artesian well. On account of hail and drought. Purchase money. To buy land and stock.
Clark	3	2	1,075 00	9	1,350 00	66	.795	2	* ------	To buy implements. To buy stock and improve.
Clay	13	7	891 00	6 7-10	6,928 00	.538	.128	------	------	To buy land. Drought and grasshoppers. For purchase money. Purchase money. To buy land. To buy land. Purchase money.
Codington	12	5	960 00	9	2,720 00	.416	.349	5	* ------	To buy a team. To prove up and improve. To buy stock and improve. To buy stock and improve. To buy stock and improve.

* No answer.

FARM MORTGAGES, 1893—*Continued.*

COUNTIES.	Number Reporting.	Number Farms Mortgaged.	Average of Mortgages.	Average Per Cent Rate of Interest.	Average Value of Farms Mortged.	Per Cent of Farms Mortgaged.	Average Per Cent of Value of Farms Mortgaged.	Number of Chattel Mortgages.	Average Size of Chattel Mortgages.	Reasons for Making Mortgages.
Davison	7	6	791 00	7 1-2	8,750 00	.836	....	....	....	To buy stock and improye. Drought of 1889. To buy stock. To make improvements. Purchase money and improvements. To buy more land.
Deuel	15	6	773 00	8	3,583 00	40	.215	3	*	To pay running expenses. To live and pay chattel mortgage. Purchase money and machinery. To buy land and on account of hail. Improvements. No answer.
Edmunds	3	3	900 00	8 1-3	1,500 00	100	60	1	*	Improvements and drought. Improvements. Failure of crops.
Fall River	4	1	475 00	12	1,200 00	25	.395	....	....	Purchase money and to buy stock.
Grant	9	7	528 00	9	7,188 00	.777	.072	1	....	To buy more land. Purchase money. Hail and sickness. To buy land. To buy stock and account drought. To pay running expenses. Drought.
Hand	8	1	400 00	7	3,000 00	12 1-2	.133	5	*	No answer.

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* No answer.

FARM MORTGAGES, 1893—*Continued.*

COUNTIES.	Number Reporting.	Number Farms Mortgaged.	Average of Mortgages.	Average Per Cent Rate of Interest.	Average Value of Farms Mortgaged.	Per Cent of Farms Mortgaged.	Average Per Cent of Value of Farms Mortgaged.	Number of Chattel Mortgages.	Average Size of Chattel Mortgages.	Reasons for Making Mortgages.
Hamlin	21	9	1,059 00	9 1-7	4,500 00	.42	.246	7	141 00	To buy more land. Improvements. To buy stock and for improvements. To buy land and for improvements. To pay debts. To pay debts. Drought. Purchase money. To buy more land.
Jerauld	4	1	450 00	10	1,400 00	25	32	4	141 00	To buy stock and implements.
Kingsbury	7	1	600 00	9	2,000 00	.14	30	....	....	To buy stock and to improve.
Lake	6	6	1,083 00	10 6-10	4,766 00	100	.227	1	*	Not answered. To buy land and to improve. Hail and improvements. To buy horses and open up farm. For improvements. Drought.
Lawrence	11	7	1,342 00	10 1-6	4,866 00	.636	.27	1	*	Drought and bad management. Improvements and machinery. To help son in business. Purchase money. Purchase money. Purchase money. Drought.

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* No answer.

FARM MORTGAGES, 1893—*Continued.*

COUNTIES.	Number Reporting.	Number Farms Mortgaged.	Average of Mortgages.	Average Per Cent Rate of Interest.	Average Value of Farms Mortgaged.	Per Cent of Farms Mortgaged.	Average Per Cent of Value of Farms Mortgaged.	Number of Chattel Mortgages.	Average Size of Chattel Mortgages.	Reasons for Making Mortgages.
Meade	8	4	3,387 00	9 1-4	6,875 00	50	49	2	*	Purchase money. To buy stock and implements. To buy team and wagon and crop failure. To buy stock.
Miner	10	8	900 00	9	3,639 00	80	27	4	*	For improvements. For improvements. To live on; drought. Purchase money. To live on; drought. Purchase money and drought. Drought. Crop failure.
Moody	2	1	2,800 00	8	10,080 00	50	.277			To buy land.
McCook	8	4	1,075 00	8 1-4	8,000 00	50	.134	2	*	To pay for labor and implements. To buy more land. To pay debts. Drought and improvements.
McPherson	10	7	337 00	9 4-7	1,433 00	70	.23	4	*	No answer. Drought. To prove up. To buy land. To rebuild burnt buildings.
Roberts	5	3	813 00	8	1,833 00	60	48	3	*	To buy horses and pay debts. To buy more land. To buy land.

* No answer.

FARM MORTGAGES, 1893—*Continued.*

COUNTIES.	Number Reporting.	Number Farms Mortgaged.	Average of Mortgages.	Average Per Cent Rate of Interest.	Average Value of Farms Mortgaged.	Per Cent of Farms Mortgaged.	Average Per Cent of Value of Farms Mortgaged.	Number of Chattel Mortgages.	Average Size of Chattel Mortgages.	Reasons for Making Mortgages.
Spink	12	8	731 00	9 3-4	4,800 00	66	.15	4	*	For improvements and stock. Purchase money. Purchase money and stock. To buy land. Speculations and negotiations. To get a start. To buy land. Drought.
Sanborn	9	6	529 00	7 2-3	2,575 00	66	20	1	*	Purchase money. For improvements. For improvements. Drought and improvements. To prove up. Drought.
Turner	4	3	1,233 00	8 1-3	6,500 00	45	19	------	------	Improvements and to buy stock. To buy stock and improvements. For improvements.
Walworth	5	1	1,000 00	7 2-3	3,500 00	20	29	1	*	Improvements and teams.
Yankton	4	1	400 00	8	12,000 00	25	3	------	------	Rebuilding after fire.

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* No answer.

The following tables is taken from the late United States census bulletin, on the subject of mortgages, and will be valuable in connection with the subject of farm mortgages in this state:

MORTGAGES OF THE UNITED STATES.

Number and Amount of Real Estate Mortgages in Force January 1, 1890, and Number of Acres and Lots Mortgaged.

STATES AND TERRITORIES.	TOTAL.		ON ACRES.		ON LOTS.		NUMBER MORTGAGED.	
	Number.	Amount.	Number.	Amount.	Number.	Amount.	Acres.	Lots.
United States	4,777,698	$6,019,679,985	2,303,061	$2,209,148,431	2,474,637	3,810,531,554	273,352,109	4,161,138
Alabama	35,732	39,027,983	27,424	28,762,387	8,308	10,265,596	6,088,488	14,221
Arizona	1,474	2,348,519	715	1,580,301	759	768,218	223,070	2,357
Arkansas	25,138	14,361,593	17,818	9,051,117	7,320	5,315,478	2,536,762	16,647
California	112,637	241,050,181	45,127	120,890,877	67,510	120,159,304	11,069,600	187,297
Colorado	54,600	85,058,793	20,484	30,195,056	34,116	54,863,737	3,496,112	182,617
Connecticut	57,996	79,921,071	12,311	13,176,736	45,681	66,744,335	440,360	40,416
Delaware	9,641	16,122,696	2,678	5,649,705	6,873	10,472,991	289,624	7,623
District of Columbia	23,923	51,986.589	319	2,226,277	23,604	49,760,312	11,755	37,020
Florida	20,681	15,505,119	14,094	10,629,142	6,587	4,875,977	2,329.359	17,366
Georgia	48,519	27,387,550	34,731	16,969,687	13,788	10,417,903	7,769,359	17,049
Idaho	3,143	3,167,249	2,506	2,811,130	637	356,119	359,561	1,572
Illinois	297,233	384,299,150	128,986	165,289,112	168,247	219,010,038	16,660,987	286,148
Indiana	171,420	110,730,643	106,155	74,553,217	65,265	36,177,426	6,822,499	94,239
Iowa	252,559	199,774,171	171,452	149,457,144	81,107	50,317,027	16,307,145	163,701
Kansas	298,884	243,146,826	203,306	164,720,071	95,578	68,426,755	26,577,522	265,341
Kentucky	60,284	45,693,749	34,612	23,779,911	25,672	21,913,838	3,464,754	31,422
Louisiana	20,372	28,113,909	11,352	15,750,153	9,020	12,763,756	3,686,664	18,440
Maine	58,851	32,627,208	30,985	41,150,646	27,866	18,476,562	4,092,296	28,989
Maryland	53,908	64,577,803	21,139	27,828,999	32,769	36,748,804	2,062,325	41,556
Massachusetts	178,202	323,277,668	33,385	42,441,247	144,817	280,836,421	920,313	132,683
Michigan	222,761	150,472,700	144,023	95,753,329	78,738	54,719,371	9,669,723	129,752
Minnesota	195,580	197,745,989	97,078	75,355,562	98,502	122,390,427	10,209,647	194,586
Mississippi	30,767	19,075,980	26,186	15,829,914	4,581	3,246,066	5,474,740	8,384
Missouri	192,028	214,609,772	103,161	101,718,625	88,867	112,891,147	10,159,021	155,441
Montana	5,937	8,729,907	2,385	5,094,325	3,552	3,635,578	564,464	7,950
Nebraska	155,377	132,902,322	107,175	90,506,968	48,202	42,395,354	14,085,290	94,772
Nevada	1,256	2,194,955	928	1,836,655	328	358,340	366,039	700
New Hampshire	25,189	18,968,259	14,557	9,430,540	10,632	9,537,719	1,151,143	10,455
New Jersey	141,704	232,565,919	25,197	54,025,990	116,507	178,539,929	1,539,601	172,261
New Mexico	1,523	6,644,673	567	5,639,416	956	805,257	1,630,725	2,542
New York	579,472	1,607,874,301	156,814	217,813,055	422,658	1,390,061,246	11,372,354	647,386
North Carolina	47,404	21,471,428	36,143	14,537,449	11,261	6,933,979	4,886,717	13,297
North Dakota	38,767	23,777,480	33,734	22,098,092	5,033	3,679,388	4,387,568	10,565

MORTGAGES OF THE UNITED STATES.

Number and Amount of Real Estate Mortgages in Force January 1, 1890, and Number of Acres and Lots Mortgaged.

STATES AND TERRITORIES.	TOTALS.		ON ACRES.		ON LOTS.		NUMBER MORTGAGED.	
	Number.	Amount.	Number.	Amount.	Number.	Amount.	Acres.	Lots.
Ohio	271,055	$259,842,188	119,730	$134,107,706	151,325	$125,734,482	7,762,136	210,380
Oregon	22,553	22,628,437	16,250	15,983,361	6,303	6,945,076	2,528,820	15,360
Pennsylvania	518,165	613,105,802	140,127	121,844,907	378,038	491,260,895	6,206,202	570,395
Rhode Island	25,991	36,778,243	2,640	5,262,243	18,359	31,516,000	96,546	29,970
South Carolina	27,065	13,780,302	19,900	9,060,351	7,165	4,719,951	3,713,556	8,910
South Dakota	60,221	36,115,773	50,151	29,356,865	10,070	6,758,908	6,997,823	29,526
Tennessee	39,470	40,421,396	57,196	16,425,144	22,274	23,996,252	3,018,045	32,896
Texas	93,877	93,864,178	72,922	75,131,355	20,955	18,732,823	32,192,178	51,598
Utah	5,908	8,040,829	2,059	2,426,018	3,849	5,614,811	344,164	6,111
Vermont	34,388	27,907,687	22,294	19,439,988	12,094	8,467,699	1,667,602	12,242
Virginia	34,192	28,691,726	20,123	16,564,282	14,069	12,127,444	3,487,100	20,608
Washington	29,632	44,078,449	18,449	24,727,245	11,183	19,351,204	2,739,257	31,109
West Virginia	29,357	19,702,505	20,450	14,517,092	8,907	5,185,413	3,828,199	11,754
Wisconsin	164,826	121,838,168	111,735	81,535,361	53,091	40,302,807	10,215,886	91,558
Wyoming	3,028	4,967,065	1,418	3,013,674	1,610	1,953,391	822,007	3,926

AGRICULTURAL STATISTICS.

The following table is the result of the compilation of the returns from 30 counties in the state, made by 254 farmers thereof, for the year 1893. The averages for the whole state are made up from the total returns, 254, and are as accurate as can be expected, but the averages by counties, being made from the returns of each county, must be judged for accuracy according to the returns from the county considered. On the great staple, wheat, Yankton county, with 4 returns shows the highest average yield at 21 bushels, while Clay, an adjoining county, with 12 returns, shows an average of 18 7-12 bushels. Buffalo county, with 10 returns, shows an average yield of but 5 3-10 bushels and is the lowest on the list; while the average of the whole state is 11 37-100 bushels. In corn, Clay is the highest, with an average of 45 bushels to the acre, while Buffalo is the lowest, with an average of 8 2-9 bushels, the average for the state being 22 29-100 bushels. In oats, Clay, with 12 returns, also shows the highest average at 37 bushels, while Buffalo is again the lowest, with but 8 bushels, the average for the state being 21 bushels. In barley and rye and flax, Clay county is again the highest, with an average yield per acre of 29½, 22, and 10⅔, respectively, while Jerauld is the lowest in barley, with but an average of 7 bushels, Brown the lowest in rye, with 3 bushels, and Charles Mix the lowest in flax, where the crop seems to have totally failed. These figures strikingly illustrate the difference between moisture and the lack of moisture. In Clay county the rainfall was sufficient for the needs of agriculture. In Buffalo county it was not, and this tells the whole story.

The wool table, which follows, will show some interesting figures concerning this industry and those showing the yield are the first gathered by this office.

AVERAGE YIELD PER ACRE OF GRAIN FOR THE YEAR 1893.

COUNTIES.	Number Reports Received.	Wheat.	Corn.	Oats.	Barley.	Rye.	Flax.
Aurora	13	11 8-13	14 9-13	16 11-12	10 1-3	14	---------
Buffalo	10	5 3-10	8 2-9	8	9 1-2	5 1-2	---------
Butte	6	10	17 1-2	17 2-5	15	10	---------
Brown	14	7 1-7	20	17 1-11	13 1-10	3	8
Codington	12	9	12 3-4	19 3-4	16 4-5	-------	6 3-4
Charles Mix	9	14	20 2-3	22 8-9	14	15 1-2	1 5-6
Clay	12	18 7-12	45	37 5-11	29 1-2	22	10 2-3
Campbell	17	11 7-17	21 1-4	19	18	10	7 1-3
Custer	3	16	13 1-2	30	----------	-------	---------
Clark	3	10 2-3	24	24	20	-------	9 1-3
Douglas	2	11	15	10 1-2	----------	-------	---------
Deuel	13	9 3-13	30 4-7	13 4-13	27 1-10	11	8 1-4
Davison	7	12 2-7	22 5-7	23	19 1-3	11 1-2	7 1-2
Edmunds	3	7 3-6	30	24	13 1-6	14	4 1-3
Grant	7	9 2-7	24 1-3	24	17 1-2	-------	---------
Hand	8	9 3-8	14 3-4	21	10 2-5	9	6 1-3
Hamlin	21	11 3-4	24 5-8	22 1-5	14 11-14	-------	8
Jerauld	4	8 1-2	10 3-4	12	7	-------	3
Kingsbury	7	10 3-7	25	19 3-7	11	7	7 3-5
Lake	6	13 2-3	27 1 2	26	19	16	4 1-2
Lawrence	6	11	22	15	20	-------	---------
Moody	2	13 1-2	25	31	15 1-2	16	8 1-2
Meade	4	10 1-3	18	26 3-4	20	20	---------
Miner	9	13 1-2	23 1-2	20 1-2	17	19 3-4	6 1-4
McCook	8	17	28 1-2	34 1-4	21 3-5	21	5 1-2
McPherson	9	6	21	13	12 1-2	10 1-4	---------
Pennington	2	11	25	30	----------	-------	---------
Roberts	4	9 1-4	22	27	20	-------	9 1-2
Spink	12	9	15 1-2	15	13 1-3	8 1-2	6 1-4
Sanborn	9	11	20 1-2	17	15	12	9
Turner	4	14	32	22 3-4	19	-------	6
Walworth	4	11 1-4	20	13 2 3	----------	-------	7 2-5
Yankton	4	21	40	32	----------	-------	---------
Whole state	254	11.37	22.29	21.53	16.40	12.80	6.90

YIELD OF WOOL, 1893.

COUNTIES.	Number Reports Received.	Average Yield in Pounds.	Number of Sheep Clipped.
Aurora	2	5 2-3	99
Buffalo	1	6	169
Brown	4	9 3-10	84
Codington	3	8 2-3	97
Campbell	3	6	788
Clay	2	6	37
Charles Mix	1	8	10
Deuel	7	7 1-4	402
Edmunds	2	5 1-5	500
Hamlin	5	8 5-6	82
Hand	1	8	83
Kingsbury	1	7 1-2	550
Miner	2	6 3-4	47
Meade	1	7	900
Moody	1	7	168
McCook	1	7	117
McPherson	2	7	94
Spink	5	6 5-6	1,215
Walworth	3	6 7-10	--------
Whole State		7.08	

The following table shows the estimated cost of raising grain in this state, as estimated by the farmers who raise it. The average for the whole state is made from the total of returns, 219. The cost of raising a bushel of wheat is put by the farmers, themselves, at 48 cents; of corn at 26 cents; of oats, at 25 cents; of barley at 30 cents; of rye at nearly 40 cents and of flax at 56 cents.

FARM REPORTS.

Estimated Cost of Raising One Bushel of the following Named Grain for the Year 1893, Viz:

COUNTIES.	No. of Reports Rec'd.	Wheat. Cents.	Corn. Cents.	Oats. Cents.	Barley. Cents.	Rye. Cents.	Flax. Cents.
Aurora	8	45 3-4	27 3-8	23 7-8	31 2-3	31 2-3	25
Buffalo	9	82 1-9	56 8-9	46 1-3	42 5-6	40	------------
Butte	6	62 5-6	54 4-5	47 1-7	40	57	------------
Brown	13	58 9-13	26	31	36 7-8	65	53
Codington	11	47 10-11	34 1-2	25 4-11	27 5-9	--------	57 1-5
Charles Mix	8	40	23 3-4	21 1-4	32 1-2	28 1-3	$ 1 00
Clay	9	43 4-9	18 1-2	18	21 1-2	--------	34
Campbell	15	52 13-15	28 8-11	31 1-2	38 1-3	42 1-2	56 5-11
Custer	3	50	36 2-3	23 1-2	----------	--------	------------
Clark	3	33 1-2	16	17	25	--------	20
Douglas	2	41	28	68	----------	--------	------------
Deuel	11	54 7-11	21	23	24	40	50
Davison	5	45 2-5	18	20	24	45	70
Edmunds	2	51	26	27	33	35	74
Grant	6	48	19 3-5	23 2-3	30	--------	------------
Hand	4	46 1-4	34	30 1-2	60	30	53
Hamlin	20	49 7-20	27	22	32	--------	52
Jerauld	4	46 2-3	27 1-2	28	25	50	67
Kingsbury	7	51 4-7	23	19	25	50	60
Lake	6	50	18 3-5	20	25	30	67
Lawrence	4	56	25	24	32	35	------------
Moody	2	39	26	23	32	45	52
Meade	4	53	34	35	40	--------	------------
Miner	8	44 3-4	20	18 3-4	25 1-3	33	60
McCook	6	47	21	21	26	32	------------
McPherson	8	55	31	29	35	38	67
Pennington	2	30	15	10	10	--------	------------
Roberts	3	55	30	17	30	--------	------------
Spink	12	37 3-4	25 1-2	23	27 2-3	33	50
Sanborn	8	49	25	24 2-3	26 2-3	35	45
Turner	3	41	15	16	18	--------	50
Walworth	4	44	25	22 1-2	35	--------	55
Yankton	3	42	15	16	25	--------	75
Whole State	219	.483	.264	.25	.302	.396	.56

The year 1894 is one of disaster to agricultural operations, not only in our own state but generally in the west, and the depression caused thereby has rendered it impossible to gather information concerning these operations, where there is nothing to return but an account of loss of crops by the failure of accustomed rains. Outside of the Black Hills region, where there was an abundant rainfall and a bountiful crop, the entire area of the state suffered, in some portions the loss being well nigh total, in others in varying degrees; but none, with the exception of the Black Hills region, wholly escaping. From the few returns received the following tables have been compiled, which, with the replies of farmers, to the question as to what, in their opinion, will better their condition (given hereafter) will tell the story of the year.

FARM REPORTS.

Estimated Cost of Raising One Bushel of the Following Named Grain in South Dakota for the Year 1894:

No. of Reports Received.	Wheat.	Corn.	Oats.	Barley.	Rye.	Flax.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
44	52 1-2	26 1-2	26	34 1-4	43 1-2	58 1-3

FARM REPORTS.

Average Yield Per Acre of the Following Named Grain in South Dakota for the Year 1894:

No. of Reports Received.	Wheat.	Corn.	Oats.	Barley.	Rye.	Flax.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
67	10 1-7	23 1-2	21 3-5	15 2-3	8	4 3-4

FARM REPORTS.

Average Clip of Wool Per Sheep and Average Yield Per Acre of the Following Named Productions in South Dakota for the Year 1894:

No. of Reports Received.	Number of Sheep.	Average Yield.	No. of Reports Received.	Hay.	Millet.	Potatoes.
		Pounds		Tons.	Tons.	Bushels.
14	2,194	6 2-7	26	8-10	1 1-3	50

FARM REPORTS.

Area, Product and Value of the Following Named Productions of South Dakota for the Year 1893.

[Compiled from Report of the Statistician United States Agricultural Department.]

Article.	Acres.	Bushels.	Value.
Wheat	2,414,281	20,521,389	$ 9,029,411
Corn	865.472	20,511,686	5,127,922
Oats	765,582	16,460,013	4,115,003
Rye	7,892	83,655	30,952
Barley	155,015	2,387,231	787,786
Buckwheat	1,305	19,836	12,893
Potatoes	44,045	2,378,430	1,403,274
Hay	971,825	*1,379,992	5,064,571

* Tons

The following table, taken from the report of the statistician of the agricultural department of the United States, "exhibits by states and territories the proportion of merchantable and unmerchantable corn; the price per bushel and the value of the whole crop" for 1893. "Quality as well as quantity being of importance," I thought it best to give this table. It will be noticed that the figures of the statistician show that the highest grade of this cereal, in the United States, is raised in our own state and that we are the land of "No. 1 hard," in corn as well as in wheat:

STATES AND TERRITORIES.	MERCHANTABLE.				UNMERCHANTABLE.			
	Bushels.	Per Cent	Price per Bushel. Cents.	Value.	Bushels.	Per Cent.	Price per Bu. Cts.	Value.
Maine	208,250	75	.59	$ 181,868	102,750	25	.23	$ 23,633
New Hampshire	691,650	87	.56	387,324	103,350	13	.33	34,106
Vermont	1,257.520	88	.57	716,786	171,480	12	.32	54,874
Massachusetts	1,260,150	93	.55	693,083	94,850	7	.33	31,301
Rhode Island	174,400	80	.72	125.568	43,600	20	.27	11,772
Connecticut	982,400	80	.61	599,264	245,600	20	.32	78,592
New York	11,746,350	77	.54	6,343,029	3,508,650	23	.31	1,087,682
New Jersey	5,886,780	82	.49	2,884,522	1,292,220	18	.23	323,055
Pennsylvania	23,711,240	76	.30	7,113,272	7.487,760	24	.27	2,021,695
Delaware	4,326,960	88	.39	1,687,514	590,040	12	.20	118,008
Maryland	12,363,960	82	.48	5,934,701	2,714,040	18	.28	759,931
Virginia	23,737,840	76	.46	10,919,406	7,496,160	24	.25	1,874,040
North Carolina	23,064 580	77	.51	11,762.936	6,889,420	23	.25	1,722,355
South Carolina	10,375,830	83	.63	6,536,773	2,125,170	17	.24	510,041
Georgia	28,626,300	85	.59	16,889,517	5,051,700	15	.29	1,464,993
Florida	4,123,560	84	.66	2,721,550	785,440	16	.34	267,050
Alabama	24,362,940	86	.59	14,374,135	3,966,060	14	.26	1,031,176
Mississippi	22,977,130	89	.61	14,016,049	2,839,870	11	.20	567,974
Louisiana	12,324,960	81	.63	7,764,725	2,891,040	19	.25	722,760
Texas	48,936,800	80	.51	24,957,768	12,234,200	20	.32	3,914,944
Arkansas	26,973,240	84	.51	13,756,352	5,137,760	16	.28	1,438,573
Tennessee	55.375.500	87	.40	22,150,200	8,274,500	13	.22	1,820,390
West Virginia	10,848.530	77	.52	5,641,236	3,240,470	23	.29	939,736
Kentucky	55,766,560	82	.43	23,979,621	12,241,440	18	.23	2,815,531
Ohio	54,813,950	85	.37	20,281,162	9,673,050	15	.22	2,128,071
Michigan	16,779.070	77	.39	6,543,837	5,011,930	23	.18	902,147
Indiana	70,856,270	83	.35	24,799,695	14,512,730	17	.22	3,192,801
Illinois	144,595,000	90	.31	44,793,450	16,055.000	10	.20	3,211,000
Wisconsin	23,454,360	81	.34	7.974,482	5,501,640	19	.21	1,155.344
Minnesota	22,342,560	89	.32	7,149,619	2,761,440	11	.18	497,059
Iowa	239,240,400	95	.25	59,810,100	12,591,600	5	.15	1,888,740
Missouri	140,796,220	89	.30	42,238.866	17,401,780	11	.21	3,654,374
Kansas	104,592,750	75	.29	30,331,898	34,864,250	25	.24	8,367,420
Nebraska	133,687,150	85	.23	30,748,045	23,591,850	15	.18	4,246,533
SOUTH DAKOTA	19,896,640	97	.27	5,372,093	615,360	3	.20	123,072
North Dakota	400,320	96	.35	140,112	16,680	4	.15	2,502
Montana	28,800	96	.53	15,264	1,200	4	.30	360
Wyoming	39,100	95	.50	18,050	1,900	5	.25	475
Colorado	1,502,940	74	.41	615,205	528,060	26	.25	132,015
New Mexico	502,440	79	.72	361,757	133.560	21	.28	37,937
Arizona	61,500	75	.67	40,205	20,500	25	.25	5,125
Utah	132,480	72	.54	71,539	51,520	28	.30	15.456
Nevada	----------	-----	-----	----------	----------	-----	-----	----------
Idaho	28,800	90	.55	15,840	3,200	10	.25	800
Washington	166,470	93	.51	84,900	12,530	7	.26	3,258
Oregon	268.920	83	.54	145.217	55,080	17	.28	15,422
California	2,070,250	91	.39	807,398	204,750	9	.25	51,188
Total	1,386,356,820	85.6	.349	$ 484,498,033	233,137,180	14.4	.228	$ 53,264,771

FARM REPORTS.

Table by States Showing Final Estimates of the Average Farm Prices of Various Agricultural Products, December 1, 1893.

STATES AND TERRITORIES.	Corn per Bushel.	Wheat per Bushel.	Rye per Bushel.	Oats per Bushel.	Barley per Bushel.	Buckwheat per Bushel.	Potatoes, Irish, per Bu.	Hay per Ton.
Maine	$0.62	$1.02	$1.08	$0.45	$0.67	$0.54	$0.54	$ 12.13
New Hampshire	.57	.85	.78	.43	.70	.37	.63	15.60
Vermont	.61	.85	.73	.42	.60	.53	.48	10.63
Massachusetts	.62	--------	.75	.42	.90	.75	.76	17.33
Rhode Island	.69	--------	.79	.43	.87	1.00	.79	19.60
Connecticut	.64	--------	.66	.40	--------	.72	.75	17.50
New York	.55	.76	.63	.30	.60	.60	.55	11.33
New Jersey	.52	.70	.70	.35	--------	.66	.75	17.43
Pennsylvania	.49	.65	.57	.35	.50	.59	.60	14.40
Delaware	.40	.60	.50	.38	--------	.55	.65	17.00
Maryland	.44	.76	.51	.35	.55	.58	.68	14.25
Virginia	.46	.63	.56	.35	.48	.55	.57	13.09
North Carolina	.50	.72	.70	.44	.52	.49	.60	11.11
South Carolina	.60	.98	1.10	.53	1.15	--------	.77	9.67
Georgia	.56	.90	1.08	.52	1.15	--------	.92	12.06
Florida	.68	--------	1.10	.55	--------	--------	1.17	19.75
Alabama	.59	.88	1.15	.51	--------	--------	.88	11.24
Mississippi	.55	.85	.88	.47	--------	--------	.84	9.61
Louisiana	.57	--------	--------	.44	--------	--------	.83	9.00
Texas	.54	.58	.98	.42	.62	--------	1.03	9.60
Arkansas	.45	.65	.58	.39	--------	--------	.64	9.37
Tennessee	.39	.57	.59	.31	.55	.54	.49	10.76
West Virginia	.55	.72	.65	.38	--------	.68	.59	12.75
Kentucky	.43	.57	.58	.34	.51	--------	.56	10.16
Ohio	.40	.57	.47	.30	.47	.60	.67	10.05
Michigan	.45	.57	.44	.32	.49	.53	.45	9.16
Indiana	.36	.53	.45	.28	.45	.56	.73	9.16
Illinois	.31	.51	.41	.27	.40	.57	.74	8.86
Wisconsin	.35	.54	.43	.27	.43	.57	.49	7.20
Minnesota	.34	.51	.41	.26	.36	.53	.46	4.57
Iowa	.27	.49	.41	.23	.33	.61	.65	6.16
Missouri	.30	.48	.45	.25	.40	.58	.57	7.04
Kansas	.31	.42	.38	.27	.47	.71	.79	4.69
Nebraska	.27	.40	.35	.22	.31	.52	.79	4.87
SOUTH DAKOTA	.25	.44	.37	.25	.33	.65	.59	3.67
North Dakota	.38	.45	.32	.28	.31	.63	.49	3.72
Montana	.70	.60	.47	.37	.50	--------	.69	7.89
Wyoming	.63	.65	.77	.40	.73	--------	.65	8.00
Colorado	.51	.52	.50	.37	.50	--------	.54	6.98
New Mexico	.71	.75	.68	.51	.58	--------	.67	8.50
Arizona	.66	.65	--------	--------	.52	--------	.60	8.25
Utah	.58	.60	.47	.33	.45	--------	.33	5.17
Nevada	--------	.73	--------	--------	.60	--------	.40	10.00
Idaho	.71	.60	.50	.41	.53	--------	.56	5.50
Washington	.62	.48	.69	.35	.39	.80	.39	9.17
Oregon	.47	.55	.73	.37	.40	.50	.47	8.10
California	.50	.53	.60	.38	.42	.71	.50	7.87
General average	$0.365	$0.538	$0.513	$0.294	$0.411	$0.583	$0.59	$ 8.68

TRANSPORTATION RATES.

All Rail Rates on Flour, Mill Stuffs, Grain and Oil Cake in Car Loads. (In Cents Per 100 Pounds. In Effect July 2, 1894.)

Chicago and Northwestern Railway and Connections.	Cts.
From St. Paul, Minneapolis and Minnesota Transfer to—	
New York	.27½
Boston	.29½
Newport News, Va	.24½

Partly Rail and Partly Water—Lake.

Chicago, St. Paul, Minneapolis and Omaha Railway and Connections.	Cts.
From St. Paul, Minneapolis and Minnesota Transfer to—	
Boston, Mass., Portland, Me, or common points	.24½
New York and common points	.24½

Ocean Rates—Steamship. In Effect July 2, 1894.

	From—	To—	
Wheat per bushel	New York	Liverpool	$ 0 03
..	..	Glasgow	04
..	..	Southampton	06
Wheat per 100 ℔s	..	Bremen	09
Wheat per hogshead	..	Havre	08
Wheat per bushel	..	London	05
..	..	Newcastle	05
..	..	Antwerp	05
..	..	Hull	04
..	..	Copenhagen	54 to 60
..	Boston	Glasgow	02
..	..	Liverpool	02
..	..	London	03
Cattle per head	New York	London	12 00
..	..	Newcastle	11 40
..	..	Antwerp	11 40
..	..	Hull	9 60
..	..	Glasgow	12 60
..	..	Liverpool	11 40
..	..	London	12 00

WHAT WILL HELP THE FARMERS?

Among the questions submitted to the farmers of this state was the following, viz:

What, in your opinion, would better the condition of the farmers and laboring men?

To this question 170 replies were received, and they are given just as received, as follows, to-wit:

REPLIES.

1. A sudden change of administration, with high protection for American industries.

2. State socialism. Till that comes give us greenbacks same as during the war. Increase the currency so prices will pay produce. Then wheat at 80 cents per bushel will pay twice as many debts as wheat at 40 cents. All produce the same. Get away from that if you can! I owe $900 debts, created in the last three years.

3. I believe if the farmers of South Dakota would stop raising so much wheat and raise more stock and make their farming more diversified, they would do better. I also believe the free coinage of the American product of silver would be a great benefit. I think that a change in our commercial laws would make business more stable and permanent. Depression in business affects the farmers as well as the business men.

4. I think if the farmers would organize in farm clubs to sell their products and buy implements from first hands, and keep their organization out of politics and learn their boys to shun the saloons, their condition would soon be improved.

5. The farmers are all in pretty good standing around here. We all have lots more stock than will pay our debts.

6. The only thing that I know of is to quit going in debt, raise less grain and more stock—either cattle, sheep or hogs.

7. Our greatest drawback here is lack of transportation. Our nearest railroad point is about 40 miles. Consequently a railroad through Campbell county would benefit the farmers materially.

8. A high protective tariff would benefit the farmers—and McKinley for president would help the wage-earner.

9. We in the west travel too fast, spend too much money, go in debt when we ought to keep out. Look at any man who keeps out of debt and he is, as a rule, prosperous. State, county and city, as well as our own expenses, should be cut down.

10. I think if farmers would attend to their work a little closer and not sleep so much they would do better.

11. I think I will better my condition by doing better farming and live within my means until out of debt.

12. I am under the impression that some kind of irrigation would help the farmers of this part of the country greatly.

13. If I had to pay hired help I would be in debt about $300 for the year 1893. If I got a fair price for grain I would come out all right. We farmers cannot make our salt at present prices.

14. A little less extravagant legislation and a little more circulating medium I believe would better the condition of the farmers.

15. Artesian wells and better government will better the condition of the farmer

16. I think that the tariff, as McKinley left it, and gold and silver for money at the ratio of 17 of silver to 1 of gold would fix us out in good shape.

17. Stock of all kinds pays better here than raising wheat. It farmers would pay more attention to mixed farming than politics they would be better off.

18. I think the farmers, those here especially, could better their condition by going into more mixed farming.

19. I think what ails the farming in the west is first, the railroads want too much for to move the crops to the market, and more for them east of Chicago. Second, Speculators make our markets, and not the supply and demand. Third, Coal oils come from the ring directors. Also lumber should come from the West, as the haul

is too long from the East and we pay too much for freight each (way). Fourth, We need more volume of money per capita.

20. First, Irrigation, where water of streams can be used for that purpose, and at other places by means of artesian wells—tapping the great basin underlying nearly the whole agricultural portion of our State. Second, Grow less small grain for market and give more attention to dairying and the productions of beef, pork, and mutton. Small grain husbandry will impoverish the farmer or community following it for successive years, even in localities where climatic advantages are much more favorable than in any part of our State. Thousands of farmers who came to Dakota poor, through good judgment, careful and even management, are now well fixed, while very many have accumulated moderate riches. A bad manager, and one who never learns from observation or experience, is a hopeless case wherever found. In the cyclone of destruction that has been sweeping the country for the last nine months, leaving strewn in its wake, from Maine to California, the wreckage of destroyed industrial and business enterprises, we farmers, as a class, (are) minimum sufferers and feel less uneasiness and alarm at the threatening attitude and avowed hostility of the "powers that be," toward all our country's vast industrial interests than any of the other industrial classes and interests for the reason that, not being wage-earners, but employers of labor, we will soon be able to have help at a great reduction from the present high rates, which is out of all proportion to the value of farm products. The million or more laborers now out of employment and the hundreds of thousands more which will follow them upon the enforcement of the proposed tariff must, to escape starvation, seek and take employment on the farms at such wages as we may see fit to pay, which must afford a margin of profit, if only ten cents a day. In this way we expect to be, in a measure, compensated for some of the adverse and evil effects of the vicious and ruinous policy of this — rebel administration. There is, however, one great and all-important work to be accomplished before the sun of prosperity will again smilingly (pour) its genial rays on the lately happy and prosperous—now sad and distressed people of this nation. This second rebellion, the destructive effects of which is visible on every hand, and which is fairly estimated to have cost this nation as much in ten months as the first did in four years, must be crushed at the polls so effectually that it will not be able to pull its mangled remains together and raise its hydra head again for a century! If every farmer will do his duty at all succeeding elections, that sacred duty he owes to himself, his family, his state and country, and drive back the Nation's despoilers from place and power, the dark cloud now hanging over us—appalling the people and paralyzing the energy of the Nation will begin to move away after another year, which will be the dawning of brighter and better days.

21. I believe that if the farmers of South Dakota would raise more corn and barley and hogs and sheep, and less wheat, their condition would improve financially.

22. To keep out of debt as much as possible, and mix farming and keep a good grade of stock.

23. In my opinion, if farmers could grow more stock, keep cows, and make butter, in place of extensive grain farming, they would improve their conditions.

24. Abandon absolute wheat raising, diversify the thing, and aim at a high grade of all kinds of stock. Particularly, quit scrub horses. Wheat and poor horses are about the only stuff unremunerative at the present time.

25. The farmers of South Dakota would be all right if fair crops could be had. Irrigation would help them very materially.

26. My opinion is we ought to have a government system of irrigation.

27. I think it would be better for us farmers to raise more fodder crops and keep more cows.

28. If the merchants would reduce their prices it would better the condition of the farmers a good deal, and a Republican administration with McKinley at its head.

29. And you wish to know what would help the farmers of this State? Well, a reduction in these abominable freight rates, which is taking the hard-earned cash from the farmers and giving it to the railroads, will help the farmers. Do you expect us to prosper under such circumstances as this? Again: That low-down gambling den, called the Chicago Board of Trade—it sets the price of grain before we can have time to harvest it.

30. Heavy interest and low prices is driving me almost wild. Have to leave my place for the want of seed and go rent other lands. Seed has perished. Can float no longer.

31. To better the condition of the farmer he will have to raise more corn and less wheat, raise stock enough to feed it to and, if wheat does not sell for (as much as) 50 cents a bushel, feed that also. Till his soil better each year; work less acres and perform the work better.

32. The only thing that I can think of that would tend to better the condition of the farmers, would be a better price for grain and more money.

33. In answer to the question of what would better the condition of the farmers, I must say, the free coinage of silver.

34. Let the tariff alone, on wool, and everything else for that matter, so that we can sell the wool that is in storage in granaries and commission houses. Give us a little rain in May and June and I, as a farmer, will not kick. The corn fodder makes up for the cost of raising corn. Millet, hay and seed, is a big item with the stock in this section of the country; the seed, ground, is equal to corn meal.

35. First, cheaper money or lower interest—which means more money per capita. Second, lower prices for all they have to buy, help included. Third, strict economy in all branches of the government, State and National, a reduction in all salaries to conform to the reduced prices of all farm products. Public ownership of all means of transportation.

36. Do away with the national banks and issue the money direct from the government and establish an equal rate of interest all over the United States and make the millionaires help pay the taxes.

37. Less politics and more attention to business. Vote the republican ticket, and keep voting it until Mckinley is elected in 1896. This, in my opinion, will bring us back to better times.

38. I believe the condition of the farmers would be bettered by better and cheaper shipping facilities.

39. Farmers in South Dakota can better their condition: First, to be careful not to buy too much machinery, but take better care of what we do buy. Second, to feed our stock at home and sell the beef at 4 and 5 cents, in place of selling "frames" at $1.50 per pound.

40. Better cultivation, better protection for stock and machinery, a lower rate of interest, and live within their means—would improve the condition of the producers.

41. For this section the only salvation for the farmer seems to be diversified farming, for only those farmers who have done so have weathered the years of drouth and hard times.

42. The farmer wants more work, more economy, a beet sugar factory, more dairies and less cussing of the government.

43. The farmer needs better prices for his products, and more greenbacks, and other things too numerous to mention in this sheet.

44. I think that our country had a better yield and is more prosperous than the country surrounding us on every side. I am more heavily in debt than most farmers are. I bought my farm two years ago, so I am not in full sailing yet.

45. Cheaper rates on grain to market, more money per capita, free coinage of silver would better the condition of the farmers.

46. Mixed farming will pay well, if a farmer will do his own work, and use some common sense.

47. First, deep thinking; second, deep plowing; third, pay their debts.

48. Raising grain alone should be abandoned, diversified farming adopted, viz.: A certain amount of live stock should be raised, so that when grain is unprofitable it may be converted into beef, mutton or pork.

49. I don't know anything about the rest of the State, but this section needs irrigation if the farmers are going to live here.

50. Artesian wells and cheaper money will better the condition of the farmers of South Dakota.

51. First, I would give as my opinion that an increase in the currency would help them more perhaps than any other one thing. Money is too dear, no farmer can afford to pay the current rate of interest. Second, our freight rates are too high—farmers cannot pay such rates.

52. The best thing for the farmers of Campbell county will be a railroad. The farmers of this section of the State have from 30 to 50 miles to haul their grain to market. If there was a railroad through this county we would be happy.

53. The crop of Independents is growing less each year in this locality, but another as big a nuisance is coming to take their place, viz: the Russian thistle.

54. My opinion is to raise hogs and feed them all kinds of grain the farm will raise, for the reason that it will not pay to raise grain to sell in the market at the present prices.

55. Higher prices for products, horses and cattle, and higher wages for laborers. Then people that want to pay debts can pay them. Everything is sold at cost of production and even less.

56. I would say that the free coinage of silver, at a ratio of 16 to 1, would benefit the farmers of South Dakota greatly. Also some way of causing more moisture.

57. People are most all well off. There are very few mortgages in Clay county. Land is becoming very valuable. Farming in this county pays well.

58. To better the condition, more mixed farming. Raise sheep and hogs, and commence when they are cheap.

59. The lack of a railroad in this county prevents increase in the number of acres cultivated.

60. In my opinion, free coinage of silver and government ownership of railroads and the abolition of trusts and combines would better the condition of the farmers of this and other states.

61. I raised crops entirely under irrigation. I have given you the cost of the grain in the bins. It is yet to be marketed. The wheat tests 61 pounds to the bushel, No. 1 hard. It cost me, including water for irrigation, 65 cents to produce it, and I am offered 50 cents for it, and this is the condition of the county with reference to farming, and I am now going to stop producing any grain for sale. I am seeding my land to grass, and will handle grass and stock, and will leave the 50-cent wheat to be raised by the Democrat and Republican farmers, who seem to relish such a condition of things.

62. Do away with options and trusts and let the United States own all of the railroads.

63. To better the condition of the farmers, first, lower rates of interest; second, more railroads; third, to bust the miller trust. We have now to give the mills 240 pounds of wheat for 100 pounds of flour.

64. An increase of money in circulation is what we need, but how to get it is the question.

65. Artesian wells for the purpose of irrigation will make the farmers of this State the happiest in the United States.

66. A healthy feeling in trade circles, or in other words, a confidence in the future which will tend to stimulate manufacturers, thus furnishing plenty of employment at remunerative wages, thereby creating a demand for the products of the farm. Also, in my opinion, a rigid anti-option law preventing grain gambling and allowing the law of supply and demand, alone, to govern prices.

67. Judging from this section of the State, the farmer had better leave the country to the cattlemen, and hunt a new location.

68. It would be better for farmers to raise more stock and less grain, and feed the amount raised to the stock.

69. I believe the farmer best succeeds who diversifies his farming.

70. First, more rain, or some form of irrigation. Second, more thoroughness in farming. Third, a better grade of cattle, which, I think, can be gotten only by herd law.

71. In my opinion, more economy, refrain from going in debt, live within the means produced—would greatly benefit a majority of the farming community. If I had not bought so much land and so many high-priced horses to start in the horse business, I would now be in easy circumstances. In the last year I have sold mares for $60 that cost me $200. The stagnation in business, caused by the agitation of the tariff question, has reduced the price of all kinds of property so that a man that had, two years ago, a thousand dollars worth of property to pay a thousand dollars worth of debts, can only pay two hundred and fifty. You can see that we will lack seven hundred and fifty dollars of having enough to get out of debt. The Wilson bill or the Cleveland tariff bill will pass, and it will be some time, in my opinion, before times will improve very much.

72. I think protection, and sheep and cattle raising, and quit farming would, in my opinion, improve the condition of the farmers of the State of South Dakota.

73. I think to discourage wheat raising and encourage stock raising, dairying and all kinds of consistent manufacturing would be to the best interests of the average farmer of this western country.

74. As to what would better the condition of the farmers and laboring men, I would think a revision of the tariff and a lower rate of interest would better our condition.

75. More rain and better prices would improve our condition.

76. I think lower taxation and better prices for wheat farmers have to sell, or more money in circulation would, in my opinion, better the condition of the farmers of this State.

77. Farmers are, in general, all right. More diversified farming would help. For laboring men—learn farming and be trustworthy—is the key-note. Good hands, who understand, have been and are scarce. The country is overrun with coal miners,

78. Farmers in this county should let up on wheat raising in part and raise some stock. We must have a law enforcing the destruction of the Russian thistle on highways, railroad right-of-ways and on all fallow lands, *i. e.*, whenever they grow large enough to roll.

79. A little more common sense, cheaper money and cheaper transportation.

80 More rain and less small grain. Turn our land into sheep pastures. Sheep will get fat where other stock will starve. This is a sheep country.

81. The best thing to benefit the farmers is to have congress pass a resolution to leave our present tariff alone. Then our farmers could sell their wool. Then find some means to exterminate the Russian thistle; then pray to the Almighty to send some rain.

82. If the government would appropriate money for the sinking of artesian wells, so that we could irrigate, and loan us money at 2 per cent, this would better the condition of the farmers.

83. The only reply which my experience will suggest is less wheat and more live-stock; more selling of grain-fed meat and less shipping away of the raw material—grain and barley, etc. A little more enlightened common sense in some members of the United States senate and less useless opposition to the repeal of silver coinage laws would help the farmer, but I am afraid that many of our Independent and Populist brethren are standing in their own light on this question, just as persistently and more blindly than Stewart, Jones and Peffer in the United States senate.

84. In my opinion, the condition of the farmers would be bettered by diversifying the farm productions more, such as raising more stock of different kinds.

85. If our farmers will raise more stock, less wheat, and talk less politics, they can live in this (and any) part of South Dakota.

86. In my opinion, the farmers' condition would be bettered by a larger volume of money and a cheaper rate of interest and cheaper transportation for what the farmers have to sell of the products of their farms.

87. I will say that irrigation, a little more energy, people to mind their own business, and the hanging of a few cattle thieves, would be a great benefit to this part of the country. (From Custer county.)

88. I think the best thing for this country is to start and sink artesian wells, as we have in this town, and a good one at 500 feet deep.

89. The way to better the condition of the farmers is to get a better price for wheat, to buy machinery for less money, and a better rate of interest made by the legislature—say 7 or 8 per cent.

90. High rates of interest charged on the money which the farmers have to borrow tends to keep the farmers down as much as anything.

91. To prevent dealing in futures. Better and more diversified farming, and the free and unlimited coinage of silver would benefit the west and the farmers.

92. I am decidedly of the opinion that if the farmers of western South Dakota will stop trying to raise grain to sell and devote their energies to raising cattle, sheep and horses, with the dairy and poultry business in connection, where a market would be convenient for the latter products, they soon would become prosperous, contented and happy.

93. If we had irrigation it would be a great benefit to and would make the farmer happy in South Dakota.

94. Lower rates of interest, the repeal of two-thirds of the laws now in force in South Dakota; send men to the Legislature that know what the farmers want and will vote for it, and South Dakota will take care of itself in time.

95. As far as I can see, all of this statisical farce, State and National, is helping the money kings and not the working people. But perhaps we ought not to kick—it will soon be time for us to be tariff ruined again.

96. There should be some action taken immediately to exterminate the Russian thistle, for the benefit of the farmers of this state.

97. Farmers will be bettered when we can elect our Senators by the vote of the people. As long as our United States Senators can be bought into office by those they agree to serve, the farmer will never receive the recognition he deserves. Farmers can better their own condition by diversified farming.

98. Free silver law, tariff, increase of paper money, and a fence law west of the Jim River.

99. The farmer's condition will be bettered when he quits buying everything he sees—on time.

100. Plenty of rain and a good straight Republican administration that will put all idle men to work and give us good returns for our products.

101. I think a Republican president for the fi st thing, and then we must get rid of the Russian thistle or it will take in the country.

102. I think that if we had a government that would be for the people and not for monopoly it would be better for the farmers and laboring men every place.

103. A lower rate of interest and cheaper machinery would better the condition of the farmers of South Dakota.

104. To better the condition of the country, change in administration and free coinage of silver and an income tax.

105. A better price for wheat farmers have to sell; more money in circulation; 40-cent wheat will not pay.

106. To better the condition of the farmers it will be necessary for them to have a market for their products a little above the actual cost of *the same.*

107. Each farmer should attend strictly to his own farm and see to everything that is done on the farm, himself. Raise plenty of wheat, corn, oats, barley, and raise all the horses he needs for work and all the hogs, beef cattle and cows that he can feed.

108. I think if the farmers would work more and talk less they would get along better. Raise more hogs and cattle and corn and pay strict attention to their business and then pay their debts.

109. In my opinion the following will better the condition of the farmers. Not to keep many cattle and keep all the poultry we can raise grain for and put in from ten to twenty acres of potatoes every year. Since I have raised poultry and potatoes I have had the pleasure of not paying interest on chattel mortgages.

110. To better the condition of the farmers, keep out of debt, put the Democrats out of power and have another Republican administration like the Harrison administration. Then we will be all right.

111. The farmer can help himself by more mixed farming.

112. A Republican administration with reciprocity and a protective tariff.

113. Let the farmers inform themselves, by observation or otherwise, what crop is best adapted for the piece of ground to be cultivated.

114. Farmers should cultivate less land and thus by better cultivation increase the yield per acre. Taxes are too high in this State. It costs to much to run the machinery of State.

115. At present, farmers are more destitute than any other class. Here, in some places, the grain is taken from their granaries by bankers, cattle and horses sold by the sheriff at one-sixth of its value, gold-edge security required, 1 to 3 per cent per month. Consequences, money too scarce—too hard to get. Free coinage of silver at 16 to 1 will remedy all of the trouble.

116. I must say that with fair prices and honest government we would be all right; but under the present financial laws we cannot live, only as beggars.

117. To make laws which will abolish the Board of Trade and thereby prohibit dealing in futures or gambling on the crop when it is growing should not be tolerated in this land, and put more money in circulation, which a free coinage bill would do.

118. My opinion of bettering the farmers or their conditions is this: Don't try to work more land or keep more horses, cattle, sheep or any kind of stock than you can take good care of. Do it thoroughly and with the least possible expense.

119. To vote the Republican ticket in 1894 and 1896.

120. In my opinion, mixed farming and raise the best grade of stock would better the condition of the farmers of South Dakota.

121. More money in circulation would raise the price of farm products and help

the farmer to pay his debts. Also, government ownership of the railroads would make cheaper transportation and farmers would receive the benefit.

122. I think farmers would be better off if they would do less buying on credit.

123. To better the condition of the farmers, live within their means and vote the Republican ticket in 1894–6.

124. I think to better the condition of the farmers the government must issue more money per capita to make up for what has been destroyed by the money kings.

125. A great many things, too numerous to mention in so small a space; but one thing is, unlimited coinage of silver—whether coined free or not. If gold is coined free so ought silver. A ratio of 16 to 1 is good enough. That will, in time, give us money in circulation. It is a decided fact that when money is plenty produce is high and business prosperous. But the simplest and easiest way is for the farmers to help themselves, for it is almost impossible for to get laws made for the benefit of the farmers. I would suggest this plan: That they do as the Associated Press tells them to do—stay at home and mind their own business. Live off what they raise and sell nothing only within themselves. That will be nothing more than lots of us frontiersmen have done and got fat on it. We have plenty of small mills in the country, hand and horse power mills—in which can be made coarse flour, but it will be healthy food. If the farmers of America would do this, in the course of a few years there would be plenty of laws made for their benefit. It would be hard for some, but it would be good enough for a lot of calamity howlers, mossbacks, hayseeds, and such, as we are called. Now, in regard to how it could be done; of course there would be a good many farmers which would be closed out if no assistance was given them; but, after all, it would be just as well for them to be, for it is only a matter of a little more misery for them under the present system, for them to stay and be starved out. But to avoid that they could do as the bankers have done—issue clearing house certificates which would be good among themselves, as the farmers, as a rule, are as honest as the bankers. I can't see why they couldn't enjoy the same privileges. Let those who have no grain, but have stock, exchange with one another. Beef and bread is good food, and hides make good clothing. There is only one bad feature about this plan, *i. e.*, the poor in the city would need the products of the farms, which they could not get, and would be at the mercy of the money power.

126. Stop raising wheat, or at least don't depend on wheat entirely for the cereal crop of the farm. Have no dealings with insurance or machine agents, bankers or loan companies. Keep out of debt.

127. When the farmers of South Dakota pay more attention to the raising of stock, especially hogs, and less attention to wheat, they will be better off. They should raise cattle enough to consume all fodder raised on the farm.

128. My opinion of the method of helping the farmer's condition is—if the farmer would reduce some on wheat raising and start in to diversify their farming, and if we could get laws reducing rates of interest to 8 per cent, and also to enact laws forbidding money loaners to charge interest in advance.

129. Plow their land and attend to their own business, and let politics alone and stay at home, in place of being crying around and dabbling in politics. If they do this they will come out all right.

130. I think the financial question is where the shoe pinches the South Dakota farmer. I am no Populist. Think there is something wrong in our financial system.

131. In my opinion, a road from Bismarck through the river counties would benefit this section of country, and a few artesian wells the next best that I know of.

132. In my opinion, irrigation would better the condition of the farmers if water could be had at a small expense.

133. In my opinion, tree planting would bring more rain, and so better the condition of the farmers. More artesian wells are also needed.

134. They should avoid debts of all kinds as they would poison, and diversify crops and products. And last, but not least, vote the Republican ticket, because that party represents those economic principles which, with economy and intelligent husbandry, will make farmers and all classes prosperous.

135. To better the conditions of the farmers, stop the adulteration of all kinds of food products. A larger volume of money. Stop option dealing of all kinds.

136. A sudden change of administration, with protection to American industries.

137. If the farmers had water to use on their crops it would help farming a good deal, and by doing so would help other laboring classes.

138. The crystalization of the Omaha platform into laws or something is the only salvation of the farming and laboring classes. Up with manhood—down with the dollar!

139. Give us good crops, free silver, a protective tariff and a law compelling employer and employe to settle differences arising from wage disputes without strikes, and reduce transportation rates.

140. The condition of the farmers of Spink county will be better if they raise less wheat and more corn, oats, barley and potatoes. Farmers will do better not to plow in fall or burn stubble. Leave the stubble on the land during the winter and retain the snow and moisture for the seed, and plow in the spring.

141. About four artesian wells in each township. Dampness is what we need.

142. More rain; strict economy; purchasing less farm machinery and taking better care of what machinery we have; keep entirely away from saloons and gambling houses.

143. A good, fair price for all farm products.

144. Irrigation will at least double the yield of grain per acre and consequently better the condition of the farmers.

145. The election of a Republican congress will save the people.

146. In the way of legislation, would recommend the reduction of taxation, state and local, to the lowest point consistent with the proper management of public affairs; the enactment of additional legislation to encourage sinking artesian wells for irrigation and to encourage the extension of railroads to this and other localities deficient in means of transportation; that more attention be given to our Agricultural College experimental farm, to the introduction and testing of new grasses and forage plants adapted to this climate and to experimenting with the subsoil plow and irrigation. Would recommend farmers to farm only so much as they can do in a thorough manner; not to go into debt more than they can easily handle, and not to farm with hired hetp unless they can get it at what it is worth and no more.

147. I think the condition of the farmer might be bettered by diversified farming, if we could grow some forage plant to take the place of timothy and clover in the east.

148. Have less to do with politics, stick close to business and live within your means.

149. I think lower taxes and better prices for our products the only remedy for farmers and laboring men.

150. Artesian wells put down by the State or general government would be more beneficial to the State than anything I know of.

151. Lower taxes by reducing official salaries and the cutting down of the unnecessary expenses. Destroy usury by the Alliance sub-treasury and land loan. Operate the railroads and mines by the State or nation at cost. Artesian wells and other means of artificial water supply. Let the farmers and laborers quit using liquor and tobacco. Enforce prohibition, encourage educational and religious institutions and discourage every form of vice. I think the farmers had better raise mixed crops in the future if they want to be successful farmers.

152. It is not the want of politics but the want of rain that is baleful to the farmers of this State.

153. The income tax a law, free trade and more money per capita.

154. In 1892 our township had about 1500 or 2000 head of sheep; but tariff tinkering and consequent low price of wool has cleaned them all out.

155. Our condition can be bettered by thorough irrigation. We should ask national and State aid for said purpose instead of relief from Russian thistles. We have seventy-five voters in this township; another year like this will reduce them to thirty.

156. A little more of a knowledge of the rights of others and an ability to do a little more saving and less fault-finding with the country and with capital.

157. The hardest drawback to this country is inequality of the burden of taxation; irresponsible men in office who have no honor save to go for treasury and seek for office.

158. Better business habits would help all classes out. The saloon and the tobacco store get the working man's wages. That part they ought to save.

159. Free coinage of silver, prohibition, government ownership of railroads, success of Independent party will benefit the farmers.

160. I believe that should the farmers of South Dakota raise more stock and feed

and grain of every kind except wheat, the time would come when we would be prosperous as farmers. Wheat has made us all poverty-stricken.

161. By raising less wheat and more feed for stock, then raising stock and feeding everything raised at home on the farm. Making choice butter and eggs for market.

162. In my opinion, better crops this year would have helped our condition to considerable extent.

163. More money per capita and less taxes, and better prices for grain and produce. You regulate all of these and I will give you some more.

164. My opinion is, put the Republicans in power—national—and we farmers will consider ourselves in paradise.

165. First, stop all immigration. Our area of arable land is practically exhausted and for many years the immigration has been greater than could be assimilated, and has destroyed the industrial balance of the population and has brought our American institutions in danger. Second, protection to all American industries, including farming, which has never had its share; although under the McKinley law it has come the nearest to recognition. Third, stop monkeying with the tariff laws and adopt a settled policy and maintain it. The present uncertainty has cost the country many more millions than could be replaced by years of prosperity. Fourth, put a stop to the accumulation by capitalists of large tracts of land to be held for speculation and also for renting.

166. We are, or will be, all right in a few years.

167. I think, to better the condition of the farmers in South Dakota, we want different legislation for all poor classes in this and other states.

168. Transportation rates should be reduced two per cent between western points and Chicago, and then they will exceed by far the rates from New England to Chicago. At least two artesian wells should be sunk in each township and allowed to flow full force at all times, the land to be condemned and paid for. All rates of interest above 7 per cent should be declared usury by the legislature. P. S.—I am not a calamity howler, either.

169. More diversity of farming; also, better farming and less running in debt.

170. The same as will help other states. Take away my blood and I am dead; take away the nation's blood and it is dead. Remedy: The free coinage of silver and government money a full legal tender for all debts, and pay all pensions and government employes the same as they were paid during the war and your tramp disgrace will soon disappear.

COMMENTS.

The foregoing one hundred and seventy answers to the question as to what would better the condition of the farmers of this state may be fairly taken as the consensus of opinion of the farmers of this state on that subject. These answers are widely distributed and come from all parts of the state. They are amusing in many instances, and are entertaining and generally instructive. Some of them are the crystalization of practical wisdom. Many of them, of course, seem but to illustrate the familiar and well known habit of many of the American people of attributing all the ills that flesh is heir to, all the accidents and all the disasters, each phenomenon of earth and each portent of the sky to political causes. But, setting these aside, there is, in the remainder, much food for practical thought, many suggestions of value, much information that it would seem should receive the consideration of the lawmakers.

Two points of interest stand out in bold relief in the economic picture of this state, as painted by this testimony of the farmers. The first is that the mania for raising wheat, alone, must be abandoned before the agricultural interests can prosper, and the second is that, saving in the southeastern portion of the state, the tilling of the soil cannot be uniformly successful without an increase of moisture, either natural or artificial.

The following table is a compilation of statistics regarding the wage-earners of this state, made from returns by themselves. The information gathered touches the question of hours of work, time employed, time lost or unemployed, cause of same, wages, conditions, expenses, manner of living and nativity. It will be seen that with some exception the hours of work of the wage-earners of this state are ten per day. There are some gratifying features shown by this table. For example, out of the total number of 49 of these workers that are married, 26, or more than 73 per cent own their homes; and of this number but 4 are mortgaged. The average annual cost of fuel is somewhat high, but this is a matter that is rapidly regulating itself with the continued opening up of new mines of coal in the Black Hills, which will furnish an abundant supply at cheap rates for all parts of the state as soon as railway connection is made with points east of the Missouri river. The columns setting forth the number unemployed and the time they were out of employment gives evidence of our share in the deprivation and distresses of the prevailing business depression of the country.

1894.

Average Rate of Interest.	Number Sick During Year.	Average Time Lost by Sickness.	Fuel Used.	Average Cost of Fuel.	Average Cost or Living—Single Person.	Average Total Annual Cost of Family.	Number Native Born.	Number Foreign Born.	Average Time in U. S.—Years.
----	----	--------	Coal and wood..	$ 67 50	------------	$ 750 00	2	----	--------
----	1	1 m	..	80 00	------------	400 00	1	----	--------
----	----	--------	----------------	----------	------------	------------	1	----	--------
----	----	--------	Coal and wood..	35 00	$ 660 00	400 00	3	----	--------
	2	2½ w	..	60 00	------------	446 00	6	2	16
----	1	1 m	..	50 00	------------	500 00	1	----	--------
----	1	2 w	----------------	----------	------------	------------	1	----	--------
----	----	--------	----------------	----------	------------	------------	1	----	--------
----	3	26 d	Coal and wood..	50 00	900 00	587 00	2	3	23
1-2	14	24 d	..	58 50	460 00	660 00	13	25	17 1-2
----	1	3 m	Coal and wood..	30 00	------------	------------	----	2	3 1-2
----	----	16 d	..	60 00	------------	800 00	1	----	--------
----	----	--------	..	45 00	------------	675 00	----	1	12
----	----	--------	..	60 00	------------	600 00	1	----	--------
----	1	2 w	----------------	----------	------------	------------	----	1	12
----	----	--------	Coal ------------	60 06	------------	------------	1	----	--------
	4	9½ d	Coal and wood..	64 00	------------	550 00	4	4	12 1-2
----	1	2 w	----------------	----------	------------	400 00	1	----	--------
----	----	--------	Coal and wood..	90 00	------------	275 00	----	1	18

The following table is a compilation of statistics regarding the wage-earners of this state, made from returns by themselves. The information gathered touches the question of hours of work, time employed, time lost or unemployed, cause of same, wages, conditions, expenses, manner of living and nativity. It will be seen that with some exception the hours of work of the wage-earners of this state are ten per day. There are some gratifying features shown by this table. For example, out of the total number of 49 of these workers that are married, 26, or more than 73 per cent own their homes; and of this number but 4 are mortgaged. The average annual cost of fuel is somewhat high, but this is a matter that is rapidly regulating itself with the continued opening up of new mines of coal in the Black Hills, which will furnish an abundant supply at cheap rates for all parts of the state as soon as railway connection is made with points east of the Missouri river. The columns setting forth the number unemployed and the time they were out of employment gives evidence of our share in the deprivation and distresses of the prevailing business depression of the country.

WAGE EARNERS' REPORT FOR 1893 AND 1894.

OCCUPATION.	Number Reporting.	Average Hours of Work.	Number Unemployed.	Days Unemployed in 1893—Average.	Days Unemployed in 1894—Average.	Cause of Non-employment.	WAGES.		Number Having Wages Reduced During Year.	Average Amount Paid for Board.	Number Married.	Number Single.	Average in Family.	Average Paid for Rent per Month.	Average Number Rooms in Tenement.	Sanitary Condition of Tenement.		Number Owning Homes.	Average Value of Homes.	Average Number Rooms.	Number Mortgaged.	Average Amount of Mortgage.	Average Rate of Interest.	Number Sick During Year.	Average Time Lost by Sickness.	Fuel Used.	Average Cost of Fuel.	Average Cost of Living—Single Person.	Average Total Annual Cost of Family.	Number Native Born.	Number Foreign Born.	Average Time in U. S.—Years.
							Day.	Month.								Good.	Bad.															
Blacksmiths	2	10						$ 135 00			2		3 1 2					2	$ 1,250 00	5						Coal and wood	$ 67 50		$ 750 00	2		
Boilermaker	1	10					$ 4 00				1		6					1		6				1	1 m	"	80 00		400 00	1		
Cigarmaker	1	8					2 50			$ 5 00 w		1																		1		
Clerks and bookkeepers	3	12						75 00		25 00 m	1	2	3					1								Coal and wood	35 00	$ 660 00	400 00	3		
Carpenters	8	10		13		Unable to get work	2 62		1	4 25 w	6	2	3 5-6	$ 6 00	3	1		4	1,125 00	7	1	$ 250 00	18	2	2½ w	"	60 00		446 00	6	2	16
Drayman	1	13					2 25				1		5					1	300 00	6				1	1 m	"	50 00		500 00	1		
Deckhand	1	12	1	30	30	No work		20 00				1												1	2 w					1		
Job printer	1	9						69 35		5 00 w		1																		1		
Machinists	5	10		20	23	Strike and no work	3 45		1	25 00 m	4	1	4					4	775 00	5				3	26 d	Coal and wood	50 00	900 00	587 00	2	3	23
Miners	38	10	18	147	158	Mines closed	3 56			28 50 m	21	17	3 9-21	16 50	4			16	963 00	4	2	325 00	13 1-2	14	24 d	"	58 50	460 00	660 00	13	25	17 1-2
MINEWORKERS:—																																
Carmen	2	10					3 00				2		2	11 00	4									1	3 m	Coal and wood	30 00				2	3 1-2
Engineers, locomotive	1	8			25	Sick and vacation	4 60				1		3					1	1,500 00	5					16 d	"	60 00		800 00	1		
Orefeeders	1	12					3 00				1		8					1	1,000 00	5						"	45 00		675 00		1	12
Paperhanger	1	10					3 00				1		2					1	1,000 00	6						"	60 00		600 00	1		
QUARRYMEN:—																																
Driller	1	9		90		Winter season	3 00			4 00 w		1												1	2 w						1	12
Superintendent	1							125 00			1			9 00												Coal	60 06			1		
Stationary Engineers	8	10	4	118	181	No work	3 50		1	3 50 w 25 m	6	2	3 5-6	11 25	3 1-2			3	1,433 00	5	1	2,000 00	12	4	9½ d	Coal and wood	64 00		550 00	4	4	12 1-2
Telegraph operator	1	12						40 00			1		4											1	2 w				400 00	1		
Watchman, railroad	1	12						35 00				1						1	700 00	6						Coal and wood	90 00		275 00		1	18

The following tables shows the wages paid to wage-earners in different localities of the state, and is the result of my own personal investigation and inquiry among the wage earners at the different localities stated:

WAGE EARNERS' REPORT FOR 1894, BY LOCALITIES.

OCCUPATION.	Number Reporting.	Residence.	Highest Wages.	Lowest Wages.	Average Wages.	Sex.
Butcher	1	Huron	$ 75 00 per month	$ 40 00 per month	$ 57 50 per month	Male
Cigarmaker	1	"	20 00 per week	15 00 per week	17 50 per week	"
Clerks, dry goods	5	"	60 00 per month	40 00 per month	50 00 per month	"
Clerk, dry goods	1	"	25 00 per month	20 00 per month	22 50 per month	Female
Clerk, dry goods	1	"	1,000 00 per annum	600 00 per annum	800 00 per annum	Male
Clerk, grocery	1	"	50 00 per month			"
Clerk, millinery	1	"	6 00 per week	5 00 per week	5 50 per week	Female
Cooks, hotel (first)	2	"	60 00 per month			Male
Cook, hotel (second)		"	40 00 per month			"
Cook, hotel (third)		"	20 00 per month			"
Cook, hotel	1	"	4 50 per week	4 00 per week	4 25 per week	"
Diningroom girls	8	"	4 00 per week	3 00 per week	3 50 per week	Female
Engineer, city	1	"	75 00 per month			Male
Laborer, day	1	"	2 00 per day	1 50 per day	1 75 per day	Male
Livery stable help	2	"	25 00 per month	15 00 per month	17 50 per month	"
Tailor	1	"	15 00 per week			"
Typewriters	2	"	50 00 per month	40 00 per month	45 00 per month	Female
Typesetters		"	25 per 1,000			Either
Typesetters	5	"	12 00 per week	10 00 per week	11 00 per week	Male
Clerk, grocery	7	Aberdeen	55 00 per month	35 00 per month	49 28 per month	Male
Clerk, dry goods	13	"	75 00 per month	30 00 per month	49 38 per month	"
Clerk, meat market	1	"	40 00 per month			"
Drayman	1	"	50 00 per month			"
Dining room girls	2	"	3 50 per week	3 00 per week	3 25 per week	Female
Laborer, day	2	"	1 50 per day	1 50 per day	1 50 per day	Male
Livery stable help	6	"	45 00 per month	35 00 per month	42 50 per month	Male
Typewriters	2	"	15 00 per week	8 00 per week	11 50 per week	Female
Clerks, grocery	2	Elk Point	75 00 per month	40 00 per month	57 50 per month	Male
Blacksmiths	1	Vermillion	2 25 per day	2 25 per day	2 25 per day	Male
Clerks, dry goods	2	"	50 00 per month	40 00 per month	45 00 per month	"
Carpenters	1	"	2 50 per day	2 50 per day	2 50 per day	"
Cooks, hotel	1	"	4 00 per week	4 00 per week	4 00 per week	"
Dining room girls	1	"	3 50 per week	3 50 per week	3 50 per week	Female
Laborers, common	1	"	1 50 per day	1 50 per day	1 50 per day	Male
Livery stable help	1	"	25 00 per month	20 00 per month	22 50 per month	Male
Masons	1	"	3 50 per day	3 50 per day	3 50 per day	"
Cooks, hotel	2	Milbank	25 00 per month	20 00 per month	22 50 per month	Male
Dining room girls	7	"	4 00 per week	3 00 per week	3 00 per week	Female
Blacksmiths	2	Webster, Day Co.	2 50 per day	2 00 per day	2 25 per day	Male
Clerk, hardware	1	"	50 00 per month			"

WAGE EARNERS' REPORT, 1894—*Continued.*

OCCUPATION.	Number Reporting.	Residence.	Highest Wages.	Lowest Wages.	Average Wages.	Sex.
Clerks, grocery	2	Webster, Day Co.	$ 50 00 per month	$ 40 00 per month	$ 45 00 per month	Male
Harness-maker	1	"	50 00 per month			"
Laborer, common	1	"	1 50 per day			"
Livery stable help	2	"	25 00 per month	20 00 per month	22 50 per month	"
Tailors	2	"	8 00 per week	6 00 per week	7 00 per week	"
Carpenters	2	Parker	2 50 per day	2 25 per day	2 37 per day	"
Clerks, grocery	4	"	50 00 per month	40 00 per month	45 00 per month	"
Cook, hotel	1	"	40 00 per month			"
Dining room girls	2	"	3 00 per week	2 00 per week	2 50 per week	Female
Girls, in families	2	"	3 50 per week	2 50 per week	3 00 per week	"
Laborers, day	2	"	1 50 per day	1 00 per day	1 25 per day	Male
Livery stable help	2	"	* 22 00 per month	* 20 00 per month	* 21 00 per month	"
Stenographer	1	"	50 00 per month			Female
Clerk, grocery	2	Canton	50 00 per month	25 00 per month	37 50 per month	Male
Clerk, dry goods	1	"	50 00 per month			"
Clerk, millinery	1	"	*4 50 per week			Female
Clerk, hotel	1	"	* 25 00 per month			Male
Carpenters	2	"	3 00 per day	2 00 per day	2 50 per day	"
Dining room girls	6	"	4 00 per week	3 00 per week	3 50 per week	Female
Laborers, common	1	"	1 50 per day		1 50 per day	Male
Livery stable help	2	"	* 25 00 per month	* 20 00 per month	* 22 50 per month	"
Teamsters	1	"	1 50 per day		1 50 per day	"
Blacksmiths	1	Ipswich	2 00 per day		2 00 per day	"
Clerks, grocery	2	"	50 00 per month	30 00 per month	40 00 per month	"
Cooks, hotel	1	"	25 00 per month			"
Dining room girls	2	"	4 00 per week	2 50 per week	3 25 per week	Female
Hardware clerks	1	"	43 00 per month			Male
Hardware clerks	1	"	250 00 per annum			"
Laundry girls	1	"	3 00 per week			Female
Laborers, day	2	"	2 00 per day	1 65 per day	1 87 per day	Male
Livery stable help	1	"	18 00 per month			"
Clerks, grocery	2	Faulkton	60 00 per month	40 00 per month	50 00 per month	"
Dining room girls	2	"	4 00 per week	3 00 per week	3 50 per week	Female
Laborer, day	1	"	1 50 per day			Male
Blacksmiths	2	Redfield	2 00 per day	2 00 per day	2 00 per day	"
Clerks, grocery	4	"	60 00 per month	25 00 per month	42 50 per month	"
Cook, hotel	1	"	1 00 per day			"
Carpenters	5	"	3 00 per day	2 00 per day	2 50 per day	"
Dining room girl	1	"	3 00 per week			Female

* With board. Board at Parker $3.50 to $4.00.

WAGE EARNERS' REPORT, 1894—*Continued.*

OCCUPATION.	Number Reporting.	Residence.	Highest Wages.	Lowest Wages.	Average Wages.	Sex.
Dry goods clerk	1	Redfield	$ 60 00 per month			Male
Livery stable help	2	..	1 50 per day	$ 1 00 per day	$ 1 25 per day	..
Laborers, day	2	..	1 50 per day	1 00 per day	1 25 per day	..
Meat market help	1	..	50 00 per month			..
Tailor	1	..	25 00 per month			..
Tailoress	1	..	1 00 per day			Female
Carpenter	1	Clark	2 25 per day			Male
Cook, hotel	1	..	5 00 per week			..
Dining room girls	2	..	4 00 per week	3 50 per week	3 75 per week	Female
Blacksmiths	5	Watertown	2 50 per day	2 00 per day	2 25 per day	Male
Clerks, grocery	2	..	75 00 per month	30 00 per month	52 50 per month	..
Clerk, hotel	1	..	20 00 per month			..
Cooks, hotel	2	..	40 00 per month	14 00 per month	27 00 per month	..
Dining room girls	1	..	3 00 per week			Female
Laborers, day	2	..	1 50 per day	1 25 per day	1 37 per day	Male
Stenographers	2	..	40 00 per month	30 00 per month	35 00 per month	Female
Teamster	1	..	20 00 per month			Male
Blacksmiths	4	East Sioux Falls	3 50 per day	3 50 per day	3 50 per day	..
Engineers	2	..	60 00 per month	50 00 per month	55 00 per month	..
Stonecutters	10	..	3 50 per day		3 50 per day	..
Stone blockers	5	..	3 00 per day	2 50 per day	2 75 per day	..
Stonecutters	5	..	4 00 per day	3 50 per day	3 75 per day	..
Stone quarrymen	7	..	2 50 per day	2 00 per day	3 25 per day	..
Teamsters	1	..	40 00 per month	40 00 per month	40 00 per month	..
Blacksmiths	4	Hot Springs	3 50 per day	2 50 per day	3 00 per day	..
Carpenters	6	..	3 50 per day	2 50 per day	3 00 per day	..
Plumbers	5	..	6 00 per day	6 00 per day	6 00 per day	..
Plumbers helpers	4	..	2 00 per day	2 00 per day	2 00 per day	..
Plasterers	4	..	4 00 per day	3 00 per day	3 50 per day	..
Painters	2	..	3 00 per day	2 50 per day	2 75 per day	..
Stone Masons	4	..	4 00 per day	3 50 per day	3 75 per day	..
Stonecutters	4	..	4 00 per day	3 00 per day	3 50 per day	..
Quarrymen	6	..	4 00 per day	2 00 per day	3 00 per day	..
Carpenters	2	Fort Pierre	3 00 per day	2 50 per day	2 00 per day	..
Clerks, dry goods	1	..	30 00 per month		2 50 per day	..
Dining room girls	3	..	2 50 per week	2 50 per week	2 50 per week	Female
Laborers, day	2	..	2 00 per day	1 50 per day	1 50 per day	Male
Blacksmiths	2	Salem, McCook Co.	2 00 per day	2 00 per day	2 00 per day	..
Carpenters	2	..	2 50 per day	2 25 per day	2 37 per day	..
Clerks, grocery	4	..	40 00 per month	25 00 per month	32 50 per month	..

WAGE EARNERS' REPORT, 1894—*Continued.*

OCCUPATION.	Number Reporting.	Residence.	Highest Wages.	Lowest Wages.	Average Wages.	Sex.
Cook, hotel	1	Salem, McCook Co.	$ 5 00 per week			Male
Cook, hotel	1	..	45 00 per month			..
Dining room girls	3	..	3 50 per week	$ 3 00 per week	$ 3 25 per week	Female
Dining room girls	5	..	8 00 per month			..
Laborers, day	2	..	1 50 per day	1 00 per day	1 25 per day	Male
Livery stable help	2	..	30 00 per month	20 00 per month	25 00 per month	..
Stenographer, court	1	..	10 00 per day	10 00 per day	10 00 per day	..
Teamsters	1	..	20 00 per month	20 00 per month	20 00 per month	..
Bookkeepers	2	Deadwood	125 00 per month	75 00 per month	100 00 per month	..
Clerks, grocery	4	..	60 00 per month	40 00 per month	50 00 per month	..
Carpenters	6	..	4 00 per day	3 50 per day	3 75 per day	..
Hackdrivers	4	..	30 00 per month	30 00 per month	30 00 per month	..
Livery stable help	3	..	30 00 per month	30 00 per month	30 00 per month	..
Laborers, day	4	..	2 00 per day	1 50 per day	1 75 per day	..
Laborer, day	1	..	30 00 per month	30 00 per month	30 00 per month	..
Teamsters	3	..	30 00 per month	30 00 per month	30 00 per month	..
Bricklayers		Lead	5 00 per day	5 00 per day	5 00 per day	..
Bookkeepers	3	..	150 00 per month	75 00 per month	116 60 per month	..
Bookkeeper	1	..	60 00 per month			Female
Clerks, dry goods	6	..	65 00 per month	40 00 per month	52 50 per month	Male
Clerk, dry goods	1	..	1,000 00 per annum			..
Carpenters	10	..	4 50 per day	3 50 per day	4 00 per day	..
Delivery wagon drivers	3	..	75 00 per month	60 00 per month	67 50 per month	..
Livery stable help	4	..	35 00 per month	30 00 per month	32 50 per month	..
Masons, stone	7	..	4 00 per day	4 00 per day	4 00 per day	..
Meat market help	5	..	* 85 00 per month	30 00 per month	57 50 per month	..
Plasterers	6	..	5 00 per day	5 00 per day	5 00 per day	..
Laborers	4	Rapid City	30 00 per month	20 00 per month	25 00 per month	..
Typewriters	2	..	50 00 per month	30 00 per month	40 00 per month	Both
Teamsters	2	..	30 00 per month	20 00 per month	25 00 per month	Male

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* With board.

IDEAS OF WAGE-EARNERS.

At the close of each blank sent to the wage-earners of the state, under the head of "Remarks," I requested them to give their views on the influence of trade unions, the eight-hour day problem, labor laws, existing or desired, or upon any subject of interest to them as wage-workers, and which, in their opinion, would be of benefit to the general laboring classes. Thirty-eight of them answered pertinently to the subjects mentioned, and their replies are given, in their own words. On the question of trades unions but few approve them unqualifiedly, although but two out of the number disapprove of them. Some twelve out of the total number approve of them, in a greater or less degree, while many are silent. But on the question of eight hours a day there is much unanimity of opinion favoring it, although a few do not favor it. Of the laws asked for there are none, excepting one giving a lien to the laborer for his pay. It is quite remarkable that any considerable number of wage-earners of the state should not be informed that we already have, and long have had, such a law. Section 654 of the Code of Civil Procedure provides that "Every mechanic or other person who shall do any labor upon * * * any building, erection or other improvements upon land * * * shall have for his labor done * * * a lien upon such building, erection or improvement and upon the land * * * on which the same is situated, to secure the paymant of such labor done." Besides this there is a lien given for work done on personal property. (Sec. 1806 of the Civil Code, a lien for threshers, laws of of 1889, p. 118, and a lien for stock-breeders, laws of 1891, p. 210.) These answers, with few exceptions, are quite free from any reference to political matters, but the wail of the "man with a grievance" may now and then be observed. The burden of this wail is that there are no laws for the laboring man. Possibly an exploration among the numberless laws of the state that have been many years in force would be as fruitful of results to the "man with a grievance" as the examination for those who wish a lien law has been.

THE REPLIES.

1. I believe trade unions are good and that they promote the interests of the laboring classes.

2. Trades unions is what will benefit, and right is all that they demand.

3. I do not belong to a union of any kind because I do not consider them a benefit to any one. The eight hour day system would be of no benefit to the wage earner in this country, but I think it would be in a manufacturing community. Steady work with remunerative wages will bring the wage earner the greatest amount of enjoyment.

4. Trades unions are of no account to wage workers, only where the unions has a mutual accident and death insurance. So far as trades unions are concerned, in the matter of settling wage questions, and holding that only union men be employed by companies, is all wrong. I belonged to several trades unions but was never satisfied that it was right to place a workingman, without any trade, alongside of a man who served an apprenticeship of 3 or 4 years, at the same rate of wages per day. There are only a very small per cent. who ever learned a trade, that is, a small per cent. of the men who demand large wages and also ask for a place alongside of the men who have spent time and money learning a trade.

5. A law for an eight hour day would benefit the laboring classes.

6. I sometimes work on a farm. I have worked ten hours, but I think that eight for work, eight for rest and sleep, and eight hours devoted to the aid of those who are

in distress, a much better system than that now in vogue. I do not think it right for men to say to their employers that they cannot run their business unless they pay the wages asked by them,

7. I think that trades unions will accomplish what they want if they keep anarchists out of their unions.

8. Unions are a benefit when presided over by clear-headed men who do not approve of strikes. The eight-hour day movement should be governed by the amount of and quantity of labor performed.

9 The labor laws, trades unions and eight-hour day movement is my choice, if only enforced.

10. I think that all trade unions should work together to bring about the enactment of a law making eight hours a legal day's work; and, also, for a law to enable them to get a first lien on property on which work has been performed, to secure wages.

11. I think there should be some way of settling the "wage" question I believe a board of arbitration, either state or national, would be the best way, at present, at least.

12. I think trades unions are a great help to mechanics, as it keeps out men that have not learned a trade and gives those a better chance that have spent time and money to learn their trade. I do not favor eight hours a day unless wages are in proportion. There should be a law to protect tradesmen.

13. Immigration to this couutry of a class of farmers in good circumstances would be a great benefit to the laboring classes. Sugar, twine or starch factories would also be of great benefit, as the raw material can be produced here very cheap. I do not favor unions of any kind. Do not think them of any benefit to anyone. The eight-hour a day system would be of no benefit to the wage-earner in this country, but I think it would be in a manufacturing community. Steady work with reasonable wages will bring the wage earner the greatert amount of enjoyment.

14. Would favor an eight-hour day for labor because it would benefit more of the unemployed in receiving a steady employment if the hours of a day's work were shorter.

15. I would like to see eight hours a day and $3.50 for wages.

16. Trades unions are too divided from each other. I believe in a federation of all unions under one head, eight hours for a day's work, a supreme board of arbitration to decide all disputes between employer and employe, the adoption of the initiative and referendum in State and National legislation, and in blotting the word " male " from our constitution. Equal rights.

17. I believe in the maintenance of trades unions. I also believe in the eight-hour day problem. In regard to laws desired, I would say a law to give the laborer a first lien for labor performed on the property, would be one I would favor for any kind of work.

18. Trades unions are good, and eight hours a day by all means. Laws for the benefit of labor ? There are none.

19. The large number of miners from the silver district, caused by legislation against silver, causing the closing down of all non-dividend paying mines in this gold belt, on account of the price in the East, and the adoption by some of the companies of the contract system, caused the hard times which we are now experiencing. Remedies—study the curency question and vote for a change.

20. I think the labor unions are good, but should all come under one head, and that eight hours for a day's work should become a law; also that the Legislature should pass laws that would protect the laborer from losing his wages by insolvent companies.

21. Unions are what we want, but we don't want them to be run in the interest of capital by hired traitors. Eight hours is enough for any white man to work, and if the eight-hour system was in vogue in this country, there would be less idle men and the worker would have time to educate themselves, so as not to be led by politicians. Let me say something about Annie Creek. I want to say that it was the best move ever made for the working men and the business men also, but they are too blind to see it yet. The Legislature of the State ought to enact a law against blacklisting discharged employes. As the law of this State is now, an employer of labor can discharge a man, and if he (the employer) chooses he can blacklist him and not only prevent him from obtaining employment from himself, but prevent him from getting work from any other employer of labor. This is what is making so many anarchists

in this country. It is human for a man to err, and if a wage-earner errs and his employer discharges him from his employ that is a prerogative which belongs to him as an employer of men; but when an employe is discharged for some petty spite and the party who discharges him prevents him, or tries to prevent him, from gaining a livelihood by the sweat of his face at some other mine or factory, it is time that some steps were taken to prevent such acts on the part of the employer.

22. I think eight hours would be best, as it would benefit the laboring class by keeping more of them in steady employment.

23. I think trades unions good, if conducted right. I believe the eight-hour day would be a benefit to labor at large. I do not believe in using violence to settle strikes. All labor troubles should be settled by arbitration.

24. I advise all laboring people to support the Peoples' party candidate in national politics.

25. In principle I am a union man. I am in favor of the eight-hour day movement and the settling of all labor troubles by arbitration.

26. I am in favor of the eight-hour day system, am in favor of laws that will give labor the first lien on property on which he has performed labor.

27. Trades unions are a great benefit to the laboring classes, if carried out with moderation. Eight hours per day, with forty-eight hours for a week's work would greatly benefit the laboring man and solve the labor problem.

28. The influence of trades unions are good. I do not believe a general eight-hour law will benefit labor. I believe that there should be compulsory arbitration between labor and its employer.

29. I am in favor of the eight-hour proposition and think it would benefit all classes.

30. I am in favor of the eight-hour day. It will greatly benefit the laboring classes, and in time it will be acceptable to the employer of labor, when it shall have had time to adjust itself.

32. I think the eight-hour day will be a benefit to all when it shall have had time to adjust itself, for the reason that ten hours is too long for any man to work if he works all of the time.

33. The eight-hour day and more wages would help the laboring classes. I am a union man, but there is no union in this county.

34. A union of American-born citizens never destroys their employers property, while aliens do. Therefore Americans should stop immigration for a few years, and stop undesirable immigration to this country for a few years.

35. I think the eight-hour problem is the stuff, for ten hours is too long for any man to work and do his family duty.

36. When the laboringman learns how to vote his condition will be better.

37. I think they (trade unions) are some protection to labor, but not just the right thing. All trade unions could accomplish more by federation, I think. As to the labor laws, I did not know we had any. So far, I have never been able to find any, nor do I, until the laws are made by the laboring people. While the laws are made by the bankers and the money power of the country I expect to see the laws made for the bankers and the money power. For my part I do not think it makes any difference what party is in power. I believe the only way for the people to get laws made for the people, is to take the power of making the laws away from our representatives of making the laws and give it back to the people. Let our representatives frame the laws and the people make them. Now don't condemn me for my views, if they are not the same as yours, for you asked me for them and if I say anything I will say what I think, not for lack of something to say, but for fear what I say will not be interesting I will close by giving you permission to give my name in connection with anything that I send you.

Yours Resp'y,
J. W. HILTON,
(Terry, Lawrence County.)

38. I belong to the Cigar Makers International Union of America and can say that unionism is a grand thing for a mechanic. It shortens the hours of labor; upholds wages.

The following is a report of the manufacturers of this state from information furnished by themselves. As an item of interest it may be noted that the Western Portland Cement Company at Yankton, which is the pioneer in opening up a new industry in the state, seems to be conducting its operations successfully, having increased its output from a total valuation of $66,000 in 1893 to $90,000 in 1894. As the raw material consumed exists in boundless quantities in a state of nature, and is without value in that state, the whole value of the output of this establishment is so much added to the sum of the world's wealth. The establishment of the Baker Plaster Company at Hot Springs is the opening of a new industry and it is engaged in manufacturing stucco from native gypsum, of which such vast deposits exist in the Black Hills. The value of the plant is given at $15,000 and the annual output at $8,100.

REPORT OF MANUFACTURERS FOR 1894.

NAME OF COMPANY OR OPERATOR.	Location.	Kind of Manufactory.	No. Days Operated Each Year.	Number of Employes.	Number of Skilled Employes.	Number Unskilled Employes.	WAGES PAID.		Value of Raw Material Used.	Value of Productions.	Power Used.	Value of Plant.	Year Began Operations.
							Skilled Employes.	Unskilled Employes.					
Fountain Roller Mills	Yankton	Flour	300	4	3	1	$ 65 00 mo.	$ 20 00 mo.	Custom	$ 4,000	Artesian water	$12,000	1891
F. Brumwell	Huron	Feed, meal, etc.	150	3	2	1	40 00 mo.	35 00 mo.	*	*	Steam	1,000	1883
Excelsior Mills	Yankton	Flour	277	10	6	4	75 00 mo.	40 00 mo.	$100,000	130,000	Steam & artesian water	20,000	1872
Cascade Milling Co	Sioux Falls	"	365	14	*	*	125 00 mo.	35 00 mo.	*	*	Steam & water	*	*
Clark Roller Mills	Clark	"	222	5	4	1	50 00 mo.	35 00 mo.	*	*	Steam	20,000	1886
Castalia Roller Mills	Castalia	"	286	7	4	3	50 00 mo.	35 00 mo.	15,000	25,000	"	10,000	1886
Rapid River Milling Co.	Rapid City	"	250	7	1	6	150 00 mo.	2 00 day	*	60,000	Water	35,000	1889
Aberdeen Roller Mills	Aberdeen	"	300	15	10	5	85 00 mo.	1 50 day	124,000	156,000	Steam	40,000	1883
Kimball Milling Co	Kimball	"	*	5	2	3	80 00 mo.	35 00 mo.	*	*	"	14,000	1886
Deadwood Flouring Mills	Deadwood	"	313	6	6	----	3 50 day	2 50 day	75,000	100,000	"	30,000	1881
H. C. Jensen	Lead	Cigars	300	5	3	2	25 00 wk.	4 00 wk.	5,000	11,000	Hand	1,500	1892
N. B. Smith & Sons	Madison	Flour	300	6	2	4	80 00 mo.	20 00 mo.	28,000	*	Steam	16,000	1880
The Sturgis Creamery Co.	Sturgis	Butter & cheese	156	3	1	2	85 00 mo.	35 00 mo.	*	----------	"	5,000	1893
Brookings Roller Mills	Brookings	Flour	300	20	8	2	3 00 day	1 50 day	75,000	*	"	25,000	1884
Watertown Feed Mill	Watertown	Feed, meal, etc.	200	4	1	3	40 00 mo.	32 50 mo.	*	*	"	2,000	1887
Yankton H. & P. Co.	Yankton	----------	500	6	3	3	3 00 day	1 50 day	6,000	5,500	None	5,000	1888
James Kingsbury	Yankton	Cement paving	180	8	3	5	4 00 day	1 50 day	----------	----------	----------	----------	----
Baker Plaster Co.	Hot Springs	Stucco	120	10	2	8	3 00 day	1 75 day	1,800	8,100	Steam	15,000	1892
West'n Portland Cement Co	Yankton	Cement	240	60	9	51	3 00 day	1 50 day	----------	90,000	"	----------	1890

* No answer.

NOTE—The Aberdeen Roller Mills report one woman employed at $50.00 per month; also one employe under 18 years old at $1.00 per day. H. C. Jensen, Lead, reports two employes under 18 years old at $4.00 per week.

THE BLACK HILLS.

My predecessor, Mr. Smith, in his report for 1892 found it necessary in analyzing the result of his work to devote a special part thereof to the mining section of the state. The conditions, the interests and the influences operating in this part of the state are so diverse from those in the remainder that it is impossible to give correct information on the subject with which this bureau deals without specifying this section particularly. At page 28 Mr. Smith says: "The Black Hills mineral district includes the counties of Lawrence, Pennington and Custer." But besides these counties Fall River and Meade are in the Black Hills mining region, and in all of them mining of one kind or another is carried on. In Lawrence county is found the chief gold-mining industry, the center of which is at Lead, "being the largest city of any of the mining districts of the Black Hills," with a population now of above 5,000. This is the home of the great Homestake Mining Company, which operates not only the mine of that name but a number of others, equally valuable, if not equally as widely known; and which operates, besides these mines and the great quartz mills run in connection therewith, many other adjunct industries, among them a railroad with its branches 100 miles long, saw mills, blacksmith shops, machine shops, foundries, boiler shops, and systems of water-works that, besides furnishing water for their mills, supply the cities of Lead, Deadwood, Terra and Central.

At least 1,500 men find employment in the service of this company, directly, while many more find employment in furnishing it with such materials and articles as it does not itself produce.

I should have been glad to have given an authentic list, in detail, of the men employed by this company and the wages paid, and applied to its general superintendent for the information necessary to have done so, but it was refused.

This information, under the law, might have been compelled, but the consensus of opinion of the heads of these bureaus throughout the country is, that means to compel information should not be resorted to until after a bureau has been sufficiently long established to have educated the people up to a realization of the value of these statistics, when the necessity for so doing will rarely have to be resorted to, and, concurring in these views, I refrained from compelling the information, and collected from other sources such as I was able, which is given in the following table:

WAGES PAID BY THE HOMESTAKE MINING COMPANY.

LEAD.

Amalgamators, per day	$4 00
Blacksmiths, per day	$3 50 to 4 00
Blacksmiths, foremen, per day	5 00
Carmen, per day	3 00
Carpenters, foremen, per day	5 00
Carpenters, per day	4 00
Cage tenders, per day	3 00
Engineers, stationary, per day	$3 50 to 4 00
Engineers, locomotive, per day	$3 50 to 5 00
Stamp feeders, per day	3 00
Surfacemen, per day	2 50
Timbermen, per day	$3 00 to 3 50
Watchmen, per day	2 50 to 3 00
Wipers, per day	2 50 to 3 00

TERRAVILLE.

The Deadwood-Terra and Caledonia mines of the Homestake group are located in Terraville, separated from Lead and the main working only by a hill pierced by a tunnel on each level to make connections. Heretofore the same scale of wages prevailed at these mines as at the others of the group, but owing to the low grade of the ore and the general business depression, these mines were closed down June 23, 1893, and remained closed until August 10, 1894, when they were reopened at a reduced scale of wages.

About 300 men were thrown out of employment by this shut down and remained idle over a year.

BALD MOUNTAIN.

This mountain is a well-known land mark in the northern Hills and is situated in Lawrence county, about five miles west of Lead, and gives its name to a considerable region of country, rich in mines of gold, both developed and undeveloped. Under the general name is included several localities, such as "Ruby Basin," "Fantail Gulch," Nevada Gulch," "Portland," and "Annie Creek." The ores of this region, unlike the Homestake group, are not "free-milling" but "refractory." Their reduction requires special treatment and the works for this purpose, in consequence of water requirements, are located at Deadwood, some three miles east of Lead, and the ore is transferred from the mines to the mills at that place by a narrow gauge railroad, built for the purpose.

The following table gives the name of the mines, the number of men employed and the wages paid for the year 1893, viz.:

NAME OF MINE.	No. Men.	Rate Per Day.
Ross-Hannibal	40	$ 3 to 3 50
Horseshoe	25	3 to 3 50
Golden Reward	20	3 to 3 50
Double Standard	12	3 to 3 50
Little Bonanza	25	3 to 3 50
Tornado	10	3 to 3 50
Welcome	15	3 to 3 50
Hardscrabble	10	3 to 3 50
Boscobel	5	3 to 3 50
Buckston	10	3 to 3 50
Mark Twain	8	3 to 3 50

The Golden Reward Mining Company, above named, is also the owner of the "Deadwood Smelter and Chlorination Works," and treats not only its own ores but all others brought to it for treatment. For the year 1894 the following number of men, at the following scale of wages, were employed in these works, viz.:

Seven men at $5 per day.
Nine men at $4 per day.
Fifty-six men at $3.50 per day.
Five men at $3.25 per day.
Thirty-seven men at $3 per day.
Fifty-two men at $2.50 per day.
Total number of men employed, 166; average pay, $3.15 per day.

THE CARBONATE CAMP.

This is the name given to a mining region situated in Lawrence county about eight miles northwest from Lead. Both gold and silver are found in this section. The region is described as "a gold and silver camp with an abundance of silicious gold ore croppings with as yet but little development." The mines of this region are as follows, viz:

"The Iron Hill," situated in the center of the camp, has produced to the amount of $375,000 in gold, silver and lead. It has extensive works, consisting of a quartz mill, smelter, hoisting works, tramways, etc., but is at present closed down.

"The Ajax" is situated about two miles southwest from the Iron Hill. The ores of this mine are refractory and require treatment by chlorination or cyanide process. Owing to lack of means of transportation to the mills operating by these processes, this mine is not producing.

The following are the names of other prominent mines in this locality, viz.: The Pocahontas, U. S. Grant, Victory, Red Cloud, Transit, and Yankee Boy. Wages paid at these mines, $2.50 to $3.50 per day.

GARDEN CITY.

This is the name of a gold mining section situated about five miles north of Lead, in Lawrence county. There are no mills in this section, the ore being treated at the mills in Deadwood. There are several of these mines shipping ore, among them the "General Sheridan," whose ore averages about $25 in gold per ton. Wages same as in Lead.

GALENA.

This is a silver mining section, situated in Lawrence county about twelve miles southeast from Lead. Not regularly producing from lack of railroad facilities and the depressed condition of the silver market. The following named mines are located there, viz.:

NAME OF MINE.	Year.	Men Employed.
Two Bears	1893	17
R. B. Hayes	..	3
Silver Queen	..	5
Bullion	..	8
Hester A.	..	3

NOTE—Wages paid same as at Lead.

BLACKTAIL.

This is the name of a mining region situated about one and a half miles north of Lead. The following gold mines are located there, viz:

NAME OF MINE.	Year.	Men Employed.
The Marion	1893	11
The Wells-Fargo	..	18
American Express	..	6
Esmerelda	..	6

NOTE—Wages same as at Lead.

CENTRAL.

A city in Lawrence county about one mile northeast from Lead, and in the gold-mining region and central to many mines, only one of which is now producing, the "Columbia;" employs ten men, wages same as Lead.

YELLOW CREEK.

This is the name of a small stream that empties its waters into the Whitewood creek, "over the hill" and just outside the southern limits of the city of Lead. Along its banks some very rich gold mines have been discovered during the past summer and it has been the scene of considerable mining excitement. The character of the ore is refractory but of very high grade, assaying as high as $258 to the ton. The Alma mine has been opened up and is now regularly working and shipping ore to the mills at Deadwood for treatment, and is returning to its owners an average of about $100 per ton. A better idea of these new mines can be gathered from the following newspaper clipping than any detailed statement I might make:

> This country is now on the verge of a mining growth that will equal any yet seen. Three months ago the ground on which this strike was made was not even thought of as mineral ground. Prospectors passed it by on their way to other fields to gather wealth and left these rich deposits to be discovered almost by accident. At present there is not a foot of ground to be had and discoveries of rock assaying from $25 to $150 to the ton are being made and kept quiet until the ledges are developed. The various plants in Deadwood and vicinity in three months will not be able to handle the ore that is being uncovered in the Yellow creek and Bald mountain country. Prospectors are at work in every gulch in the country and there are parties coming into the city here to purchase provisions who leave and are not seen for a week or two, and they have prospects of ore that only the assayer knows anything about. Last week a discovery of ore was made and the ledge found just under the grass roots. A little work disclosed a body two feet thick and three assays $26.90, $29.60, and $29.75, only six feet from the surface. These are the mines that will bring this country into prominence as a gold producer that will put every other camp into insignificance.

There are many men employed in this section but the work is not yet definitely organized so that statistics can be gathered. The ground has been staked out for miles and both prospecting and developing are going on. The Alma mine employs about ten men. Wages same as Lead.

ANNIE CREEK.

As before stated, this is one of the localities of the Bald mountain region, and comes into prominence now on account of its being the scene of the labor troubles in January last, an account of which was telegraphed generally over the country and widely published in the newspapers. The origin of this trouble was as follows, viz.:

During the year 1893 the South Dakota Mining Company, with headquarters at Deadwood, acquired a group of mines in what is known as the Annie Creek locality of the Bald Mountain region in Lawrence county. This company is largely owned and is controlled by English capitalists. Shortly after acquiring these mines Mr. E. Worthington Locke of London was sent out and came to Deadwood and took charge of these properties, as superintendent, for the purpose of opening them up. He first purchased a water right on the Spearfish river and in connection with it a mill site on the same stream, and as the initial step in opening up the mines proceeded on the work of constructing a waterway or ditch to carry the water from the dam above to the mill site below. The contract for this work had been let, to one Heckert, the men had been hired, and on the morning of the 10th of January, 1894, ground was broken at the junction of Annie creek and Spearfish river and seventy-five men and a large number of teams entered on the construction of the ditch.

The transfer of these mines had been duly chronicled in the local press, and their prospective opening up was an interesting and well known event on every side. The times were dull, men were out of employment and looking for work, others had come from the idle silver districts of other states to swell the number, and all looked anxiously and hopefully toward the new operations, which were expected to be on an extensive scale and employ many men. In fact, it was thought that ultimately the operations of the company would rival those of the Homestake, in whose service, as as we have stated, some 1,500 men find work. The "times," besides being dull were, also, from a labor standpoint, critical. What would the new company do about wages? For many years a standard scale of wages had been contended for and maintained in the Black Hills. Many men were out of work, the pressure for employment strong, and the opportunity for an assault upon the standard scale inviting. Would the company do it? These were the questions agitating the laboring people before the occurrence at Annie Creek, and when it was announced that the standard scale would not be observed in the employment of men on the new work a deep murmur ran through the ranks of labor in the northern Hills and they "swore by their beards" that they would see about it. The result was when the operations on Annie creek began on the morning of the 10th of January, 1894, simultaneously with the heaving of the first spadeful of earth, a courier left the scene to warn the hosts of labor. He directed his footsteps to Central, arriving there at about 2 o'clock in the afternoon, bringing the news that about seventy-five men had been put to work on the Annie creek ditch at the reduced scale of wages. The message that he brought was like the warning of Paul Revere, and the patriots of labor flew to arms. Within half an hour notices were posted throughout Central and Terraville and a courier dispatched to Lead. Meetings were held in all three cities that evening and a plan of action adopted. Word was also sent to Deadwood. The next morning, a little after 7 o'clock, a squad of Deadwood Knights of Labor, marched into Central and found another group of Knights, with members of the miners' union, already assembled, and the two groups, numbering about 115 men, fell into line and marched towards Lead. At the western outskirts of the city they were joined by a column about 100 strong from the latter place, already in motion, and the combined force took up the line of March for Terry, five miles west and in the neighborhood of Annie Creek. Here they were reinforced by twenty-five men, when they took up the march for Annie Creek and were soon joined by forty men from Bald Mountain. To describe the remainder of this affair I quote the language of a local reporter, himself of the party, and whose description thereof is no doubt as accurate as it is graphic. He says:

The pace was set by the fastest walkers and the distance "from Terry to the camp" (at Annie Creek) was covered at the rate of about four miles an hour.

When within about one-quarter of a mile from the camp a halt was called, ranks were broken, and all took a drink from the clear mountain stream which runs by the roadside at this point.

It was then nearly 12 o'clock, and the rapid march over steep and slippery roads, covered at many points with three feet of dry snow that refused to pack, had so wearied the men that rest was necessary before the rush upon the ditchers.

Up to this time there had been no organization, no leaders.

The necessity for a spokesman was suggested and J. M. M. Benedum was nominated for that position. He requested an associate, and Mr. Lawrence, of Terraville, was nominated. These two men were elected.

While this business was in progress Sheriff Remer drove down the road from Lead. Deputy Sheriff McAllen was in the sleigh with him. The crowd filled the road and the team could not pass.

Mr. Remer was interviewed as to his purpose there and was requested to turn back. He stated that he was there of his own motion as sheriff to see that the law was not violated with impunity by either of the opposing parties. As Remer would not consent to go back the talk was purposely prolonged and the raiders, all but about twenty, resumed the march while it continued. These twenty, by talking to Remer, and by moving slowly before his team, kept him back until the other raiders had rushed upon the ditchers and driven them from their work.

The road from the place where Remer overtook the crowd to the camp is so narrow that a team could not pass two men abreast; and Mr. Remer probably doubted his right to order the twenty men walking in front of him off the public highway into four feet of snow, and further, knowing the men, he had no reason to doubt that they knew their rights and would have them strictly under the circumstances.

So Remer reached the ditch too late to prevent or even to see the beautfully clean sweep that the raiders made. * * * * * *

Neither was the writer hereof an eye-witness of the rush along the ditch. He was one of the tired men who formed Remer's vanguard. * * *

The materials for the part of this article that describes what took place along the ditch have been gleaned from those who were at the front of the rush line.

As the line approached they saw E. W. Martin and Mr. Locke standing on the ridge of dirt thrown out of the ditch, and between them and the men. They also saw Geo. S. Hopkins sitting on a stump looking very, very savage indeed, with a Winchester rifle leveled on the approaching line. So terrible did he look that the men in front involuntarily hesitated; but they could not stop, the crowd behind pushing them forward. As the line neared Hopkins he dropped his long range shooter and drew two large revolvers which he poked into the very faces of the front men. * * *

Hopkins and his guns were simply ignored, and for once he was a greatly astonished man. Martin and Locke were in the way and they were told to stand aside. They refused, in a manner frigidly dignified to do this. * * *

As they would not get out of the way they were brushed out, and in this process Lawyer Martin, who was standing on slippery ground, slipped and fell down the bank into four feet of snow. * * * * * * *

Mr. Lock also got off his feet and was assisted to rise by a Lead City miner, who expressed his regrets at Mr. Locke's tumble, at the same time assuring him that they did not come there to hurt the men, but really to benefit them by raising their wages. The miner thought Lock a workman for he wasn't dressed in camp as he dresses in town.

The other occurrences on the ditch may be briefly told. There was a rush. The men threw down their shovels and picks and left the ditch in a hurry. It was all over in a few minutes. Not a shot was fired. No raider showed a gun. No man was clubbed. Not a blow was struck. There was no resistance except the "stand" by Locke and Martin.

When Remer reached the camp the raiders demanded that Hopkins and Heckert be disarmed, and Remer complied. Remer then requested that a committee be appointed to talk with Locke, which was done. The talk amounted to nothing, and a committee was then appointed to notify the men to pack up and prepare to march to Deadwood by 2 o'clock. The committee soon reported that all but three or four consented to pack and go.

The Annie Creek men by this time had all had dinner at Heckert's camp, and the raiders had commenced to get a cup of coffee and a snatched bit of bread and meat at the "free lunch" camp just across the creek. Some got it—some didn't.

At 2 o'clock the men willing to come without compulsion were lined up, and the other few were shortly after standing with them. A few miners were placed in the lead; next came the captured men, and behind these the other raiders fell in, when the marching order, "On to Lead," was given.

The crowd, 75 captured men and 300 miners and Knights, reached Lead at 5:30, where ranks were broken, except the captured men, who marched to Deadwood.

The foregoing account being written by one of the "raiders," as he styles them, breathes the inspiration of the occasion from the standpoint. On the other side the feeling was different. Mr. Locke at once abandoned the enterprise and all the work was stopped. Seventy-five men, many of whom had families actually in need, men who had hailed the opening of this work with joy and who were only too happy to labor at the wages offered, were thrown out, on the very eve of their employment, and saw their hopes for providing for the needs of the advanceing winter, suddenly and cruelly dashed to earth. Three hundred men, by physical force, had driven seventy-five men, engaged in a lawful and peaceable employment, ruthlessly away from their means of earning a livelihood, and justified themselves in doing it on the ground that they were benefitting labor. Of course the idea was not to kill off the operations of the South Dakota Mining Company, which all hoped would be a large employer of labor so soon as its mines were developed, but under the misguided action that they were protecting the wage scale this was the result. In reviewing this affair from any standpoint I can come to no conclusion other then that it was ill advised and misguided to apply to it in no harsher terms, and most of all, was it from labor's standpoint. The work, at Annie Creek, was not of such a character, so far as it had proceeded, as to come within the classifications of any wages that it was claimed were cut, and owing to the manner of compensatson, a *per diem*, with board, it was not certain, even, that they had been cut. Again the work was of a preparatory and preliminary character, undertaken in the winter season, when hours must of necessity be short and the labor done at disadvantage. It was the opening up of a new enterprise that labor was most deeply interested in encouraging, especially at a time when new enterprises were scarce and old ones languishing.

MEADE COUNTY.

Among the industries of this county, recently inaugurated, is that of quarrying building stone on Elk creek. At Doyle station, on the Fort Pierre and Black Hills railway, (the Homestake narrow gauge, running from the city of Lead to Piedmont) extensive quarries have been opened up by the Black Hills Quarry Company. The stone is a pure sandstone, in three distinct colors, red, white and pink, the crushing power of which, according to government tests, is as follows, viz:

Pink, 8,000 pounds per square inch.
White, 12,000 pounds per square inch.
Red, 26,000 pounds per square inch.

The stone lies in strata, of various thickness, from one to twelve feet, and is easily worked without blasting. The great thickness of the thickest stratum permits the quarrying of the stone in blocks almost rivaling the monoliths of the pyramids or the great stones in the ruined walls of some city of the ancient east. During the past summer several of these monsters were hauled through the streets of Lead, each of which contained over 60 cubic feet of stone, on their way to the new Highland hoisting works, to be used as engine beds, a single stone answering for that purpose.

This company owns 100 acres of land, in one body; its quarry is well supplied with the best modern appliances for handling the quarried blocks, as well as tools, tramways and all other facilities for carrying on its work. It has convenient business buildings consisting of two offices, two storerooms, two lodging houses, two stables, two blacksmith shops and one boarding house. There is an abundance of pine timber and several springs of pure running water on the land.

Since it commenced operations in 1892 it has supplied the following persons and corporations with stone, viz.:

	Cubic Feet
Miners' Union, Lead, for opera house, cut stone	11,000
Highland Mining Company, Lead	35,000
Homestake Mining Company, Lead	25,000
Other persons, over	20,000

Making, in all, over 800 carloads at a valuation of about $25,000. It employs on an average thirty men, and pays the following scale of wages, viz.:

Laborers, per day	$ 2 50
Quarrymen, per day	3 00
Stone cutters, per day	4 50

The extent of these quarries is apparently limitless. In the language of the Superintendent "another city like New York could be built out of it and the material used would not be missed."

The greatest sources of wealth and prosperity of this county, however, are agricultural, its northern and eastern portion comprising prairie farming land and only its southern and western portion running into the Hills. Sturgis, the county seat, may be said to be the agricultural center of the Hills, at least it takes the lead in interest in this industry and is the home of the Black Hills Exposition Company, which has inaugurated a perpetual series of harvest festivals, to be held annually, in which to display the products of the soil of this section of the state. At the last one, held in September, 1894, the exhibits were numerous and were contributed by all the Black Hills counties, and were unusually fine. In the language of a local report:

> The exhibits were so numerous and varied that it would be impossible to publish a complete list, but among those most worthy of mention were the following: Display of *apples*, *pears*, *plums*, *grapes*, *etc.*, of the Black Hills Nursery at Rapid; William Fletcher, *apples*, *plums*, *etc.;* Sturgis creamery, *fine display of cheese* and *butter;* Mrs. Steidton and Mrs. Gardner, display of *fruit* jellies and preserves were the most conspicuous by the fine quality of both.
>
> G. B. McPherson had thirty head of Hereford cattle on exhibition that showed to what a splendid perfection these cattle could be brought in this western country, and an old country man while admiring this display, made the remark that they were just as good as anything he ever saw in the old country. A number of fine stallions and mares were on exhibition, and all showed the fine class of stock which this country possesses.

In the vegetable department, with fifty entries, the show could not be beaten in any county in the United States. The display was most complete in every detail, and samples of everything that was grown the last summer were there in the greatest profusion, and the 98½ pound Chillie squash of Joe Henkell was the chief attraction. The floral display of K. K. Klay, consisting of plants of all kinds, was also a center of attraction, his fig tree, tobacco and peanut plants being very fine. J. M. Coleman, of Buffalo Gap, for strange exhibits had a three horned steer 3 years old; also a sheep with three horns. We have mentioned only a few of the exhibits as space will not allow more.

It is but justice to mention that the successful inauguration of this enenterprise is due to Mr. John Scollard of Sturgis.

PENNINGTON COUNTY.

The mines of this county are principally gold mines, the most notable of which are the "J. R.," located about twenty miles from Rapid City, employs twelve men; "Summit," eight men; the "Key Stone," forty men and the "Standby," ten men. This county is also the seat of the tin mines of the Black Hills, the most noted of which is the "Harney Peak," headquarters at Rapid City. Extensive works have been constructed, but are now shut down and the proprietors are in litigation. Wages same as in Lawrance county.

CUSTER COUNTY

Is the seat of gold and mica mining. The following mines are located in that county:

North Star, employes six men.
Mecca Mine, employes six men.
Placer Mines, employ seventy men.

Wages same as in Lawrance county.

In connection with Mica running in this county a new industry is being opened up, an account of which is last given in the language of a recent extract from the Custer Chronicle, which also notes a new discovery, in gold. It is as follows, viz.:

> Operations are being actively continued at the axle grease factory. The boiler and engine rooms are now under cover, and the machinery, the most of which is now on the ground, is being prepared for setting. The electric light poles have been delivered and will be placed in a few days. It is believed that the plant will be in operation by December 1st, by which time it is expected that Sylvan City will be radiant with electric light. So mote it be. Another rich strike has been reported at the Holy Terror mine, near Keystone. The ore is said to be free milling and will run about forty dollars per ton. The vein is separate and distinct from the ore first discovered and is fully eight feet in width. The discovery is believed to be a very valuable one, fairly assuring a fortune for its fortunate owners. The stamp mill being erected by the Holy Terror company is progressing rapidly and will probably be ready to drop stamps in thirty days.

FALL RIVER COUNTY.

The industries of this county, in the nature of mining, are the quarrying of building stone, of which vast quantities, both beautiful and of great utility, exist. In the vicinity of the city of Hot Springs several extensive quarries have been opened and are producing large quantities of stone for building purposes, among which are the following:

PATRICK AND MOODY.

The stone of these quarries is in two colors, red and white. It is a soft sandstone, easily worked, and in great favor for public and business buildings. It is quarried extensively and shipped as far east as Sioux City and other points, including some in the eastern part of this State. The city hall, at the latter city, the court house at Salem, in McCook county, the city hall at Hot Springs, and several handsome business blocks in the latter place and in Lead, Deadwood, and in other Black Hills cities are built of this stone.

THE EVANS.

The stone of this quarry is a cream-colored sandstone, similar to that already mentioned, from which many buildings have been constructed, among them the immense hotel building of that name at Hot Springs, besides many business houses.

THE ODELL.

The stone of this quarry is a red sandstone of the same character as that of the Patrick Henry and Moody.

MARBLE QUARRIES.

In the vicinity of the Patrick and Moody quarries, on "Lame Johnny Creek," a beautiful quality of "kidney marble" has been discovered, of fine grain and which takes a high and mirror-like polish. Sufficient development has not yet taken place on this quarry to determine its extent, but it discloses flattering prospects of being highly valuable.

I was not successful in getting a detailed list of the number of men employed in these quarries, but I give the rate of wages paid in the table of wage-earners.

Another valuable feature of this county, which is the life and occasion of several industries is the natural springs of mineral water found there. The fame of these springs has already made them so widely known that to mention them may seem superfluous and it is only done for the purpose of noting them as the important factor that has been the means of founding and building up one of the most prosperous cities of our State—Hot Springs. The medicinal qualities of these springs have caused them to constantly grow in public favor and each year witnesses an increasing number of persons who resort to their healing waters. Great hotels, already constructed, to accommodate the crowds who annually resort here have been found insufficient for the purpose and year by year these accommodations have had to be increased and still they fall below the requirements. At the close of the present season the patronage is found to have so increased that still greater accommodations must be afforded for the swelling throng, and plans already have been perfected to construct from the beautiful stone of the adjacent quarries a new hotel of mammoth proportions.

GOLD PRODUCTION FOR 1893.

The Following Table Shows the Production of Gold in This State for 1893.

NAME OF MINE AND MILL.	Location.	No. Stamps.	Tons Reduced.	Value.
Homestake	Lead	240	350,000	$ 1,200,000
Highland	Lead	120	180,000	840,000
Deadwood-Terra	Terraville	260	180,000	300,000
Caledonia	Terraville	80	81,000	180,000
Big Missouri	Lead	30	27,000	81,000
Hawkeye	Lead	40	18,000	45,000
Minerva		20	5,143	16,000
Columbus		10	15,000	45,000
Bartholomew & Wilson		20	3,000	10,800
Standby	Rapid City	20	7,000	15,000
Minnesota			300	700
Keystone	Rapid City	20	18,736	65,000
J. R.	Rapid City	10	6,720	94,000
Red Cloud (chlorination)			100	3,000
Golden Reward (chlorination)	Deadwood		32,500	486,000
Rapid City (chlorination)	Rapid City		1,000	20,000
D. & D. Smelter	Deadwood		50,000	540,000
Two Bears (concentrating)	Galena	20		65,000
Ores shipped				15,000
Placer gold				32,000
Totals		890	975,399	$ 4,053,500

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PRODUCTION OF GOLD AND SILVER

Of the Homestake Mining Company, Lead, South Dakota, by Months, from June 1, 1892 to June 1, 1893.

MONTH.	Ounces.	FINENESS.		GROSS VALUE.		Total Value.
		Gold.	Silver.	Gold.	Silver.	
June	1,282.90	810.	170	$ 21,481 12	$ 179 92	$ 21,661 04
"	1,149.50	803.	170	19,081 10	161 28	19,242 38
"	1,546.40	814.	170	26,021 08	216 81	26,237 89
"	1,473.20	816.	167	24,850 26	202 70	25,052 96
July	998.90	815.	169	16,829 21	139 18	16,968 19
"	1,024.00	815.	170	17,251 89	143 56	17,395 45
"	1,767.40	808.	168	29,520 60	244 83	29,765 43
"	1,559.40	813.2	172	26,223 71	221 35	26,445 06
August	1,311.20	810.2	170	21,968 53	183 88	22,152 41
"	1,236.50	813.2	168	20,793 65	171 23	20,964 88
"	1,374.28	814.2	167	23.137 69	189 09	23,326 78
"	1,401.90	812.	170	23,531 63	196 58	23,728 21
September	1,113.02	797.2	166	18,348 68	152 35	18,501 03
"	1,194.20	800.	168	19,749 04	165 51	19,914 55
"	1,720.20	815.	166	28,981 15	235 21	29,216 36
"	1,732.20	814.2	165	29,165 41	235 36	29,400 77
October	1,313.10	814.2	168	22,108 94	181 82	22,290 76
"	1,369.80	815.	167	23,077 77	188 48	23,266 25
"	1,599.20	814.	170	26,909 54	224 22	27,133 76
"	1,607.90	814.	164	27,055 93	217 08	27,273 01
November	1,181.50	809.2	172	19,771 04	167 75	19,738 79
"	1,231.30	812.2	167	20,680 75	169 45	29,850 20
"	1,442.60	812.	172	24,214 80	204 79	24,419 59
"	1,442 00	810.	170	24,145 12	202 23	24,349 35
December	1,357.70	813.	170	22,817 78	190 37	23,008 15
"	1,361.40	813.2	168	22,894 03	188 52	23,082 55
"	1,589.20	810.	172	26,609 86	225 63	26,835 49
"	1,588.30	810.2	170	26,611 21	222 74	26,833 95
January	1,301.20	803.2	173	21,612 70	185 94	21,798 64
"	1,285.80	801.	175	21,290 46	186 00	21,476 46
"	1,475.10	808.	170	24,638 36	206 90	24,845 26
"	1,431.60	804.2	173	23,808 21	204 56	24,012 77
February	1,274.30	812.2	169	21,402 97	177 58	21,580 55
"	1,202.30	806.2	172	20,044 55	170 73	20,215 28
"	1,292.70	782.2	167	20,910 34	178 24	21,088 58
"	1,319.80	804.	170	21,935 28	185 16	22,120 44
March	1,465.30	798.2	171	24,186 91	206 91	24,393 82
"	1,466.00	806.2	167	24,440 91	201 83	24,642 74
"	1,676.80	793.	174	27,487 39	241 22	27,728 61
"	1,683.10	783.	170	27,242 74	236 44	27,479 18
April	1,505.50	807.	168	25,115 01	208 57	25,323 58
"	1,510.60	803.2	172	25,090 79	214 55	25,305 34
"	1,382.40	810.2	171	23,161 45	195 06	23,356 51
May	1,465.66	818.2	167	24,798 82	201 63	25,000 45
"	1,381.40	813.	167	23,216 09	190 10	23,406 19
"	1,920.80	818.	170	32,479 89	269 24	32,749 13
"	1,895.10	814.2	169	31,908 19	264 06	32,172 25
Totals	66,904.56	--------	------	$ 1,118,602 38	$ 9,346 64	$ 1,127,949 02

PRODUCTION OF GOLD AND SILVER

Of the Homestake Mining Company, Lead, South Dakota, by Months, from June 1, 1893, to June 1, 1894.

MONTH.	Ounces.	FINENESS.		GROSS VALUE.		Total Value.
		Gold.	Silver.	Gold.	Silver.	
June	1,268.10	815.	169	$21,364 34	$ 185 73	$21,550 10
..	1,251.70	812.5	170	21,023 38	184 42	21,207 80
..	1,619.30	812.	174	27,180 81	203 49	27,384 30
..	1,619.10	817.5	165	27,361 54	192 94	27,554 48
July	1,634.50	810.	175	27,368 37	206 58	27,574 95
..	1,596.40	815.	171	26,895 42	197 15	27,092 57
..	2,041.40	814.5	165	34,371 48	243 26	34,614 74
..	2,016.00	808.	172	33,672 93	250 43	33,923 36
August	1,455.40	808.	166	24,309 32	174 48	24,483 80
..	1,463.40	805.	165	24,352 19	174 39	24,526 58
..	2,079.20	794.5	163	34,148 31	244 77	34,393 08
..	2,095.50	808.5	169	34,989 04	255 52	35,244 56
September	1,563.20	790.	164	25,528 23	185 15	25,713 38
..	1,567.70	818.	167	26,509 12	189 08	26,698 20
..	1,562.00	813.5	167	26,267 43	188 39	26,455 82
..	1,533.20	797.	168	25,260 16	185 03	25,445 19
..	1,541.60	785.5	166	25,032 08	184 82	25,216 90
October	1,674.51	801.5	168	27,744 74	203 17	27,947 91
..	1,644.30	812.5	170	27,617 44	201 88	27,819 32
..	1,699.00	784.	163	27,535 21	184 62	27,719 83
..	1,688.10	804.5	167	28,073 93	187 93	28,261 86
November	1,406.40	790.	172	22,967 57	161 26	23.128 83
..	1,383.90	808.5	173	23,129 37	159 60	23,288 97
..	1,991.50	799.5	170	32,913 78	225 70	33,139 48
..	1,974.00	807.5	172	32,951 01	226 35	33,177 36
December	1,478.62	786.5	173	24,039 67	170 53	24,210 20
..	1,445.50	811.5	172	24,248 54	165 75	24,414 29
..	1,383.50	805.5	173	23,036 88	159 56	23,196 44
..	1,367.60	815.	167	23,040 70	152 25	23,192 95
..	1,405.60	814.5	171	23,666 38	160 23	23,826 61
January	1,440.40	812.5	173	24,192 76	166 12	24,358 88
..	1,433.70	810.	169	24,006 14	161 53	24,167 67
..	1,675.10	793.5	171	27,476 83	190 95	27,667 78
..	1,658 70	806.5	170	27,653 57	187 98	27,841 55
February	1,616.60	812.5	171	27,152 19	184 29	27,336 48
..	1,627.10	810.	171	26,244 46	185 48	27,429 94
..	1,568.20	810.5	171	26,274 44	157 91	26,432 35
..	1,974.90	806.5	173	26,256 47	167 44	26,416 91
March	1,540.70	811.	172	25,829 62	156 05	25,985 67
..	1,523.90	810.	173	25,516 47	155 25	25,671 72
..	1,880.90	799.	170	31,066 44	188 29	31,254 73
..	1,897.10	809.	171	31,726 18	191 03	31,917 21
April	1,474.30	809.	171	24,655 48	148 46	24,803 94
..	1,488.40	808.	171	24,860 51	149 88	25,010 39
..	1,897.00	810.5	172	31,783 33	192 14	31,975 49
..	1,897.20	806.5	173	31,729 81	193 27	31,823 80
May	1,684.60	808.5	173	28,155 02	171 62	28,326 64
..	1,704.50	811.	172	28,575 70	172 64	28,748 34
..	2,109.00	807.5	170	35,204 50	211 13	35,415 63
..	2,122.10	814.	170	35,708 31	812 44	35,920 75
Totals	82,664.65	--------	------	$1,371,567 63	$9,341 36	$1,380,908 99

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MEN EMPLOYED.

The Following Table Shows the Number of Men Employed in the Following Named Mines and Works for 1894.

NAME.	Work.	Location.	No. Men.
Old Charley	Mine	Custer county	7
Keystone	"	Pennington county	22
Holy Terror	"	"	12
Bonanza	"	"	4
Hope No. 1	"	"	3
T	"	"	2
J. R.	"	"	14
Union Hill	"	"	4
Lady Gay	"	"	12
Standby	"	"	12
Homestake	"	Lawrence county	444
Homestake	Foundry, machine shop, etc	"	160
Highland	Mine	"	184
Alma	"	"	12
Deadwood-Terra	"	"	160
Cyanide	Mill	"	42
D & D Smelter	"	"	12
Total			1,106

Besides the mineral district of the State, comprising the Black Hills, there are two other sections noted for leading productions, so that the state, in this regard, may be said to be divided into the mining district, the wheat district and the corn belt or district. The corn belt is in the southeastern portion of the State. In a pamphlet recently issued in the interest of that section the following "brief description of the Corn Belt of South Dakota" is given.

While there is no sudden "jumping off place" where corn ceases to be safe and sure, the corn belt is generally made to include all that section of the State for a distance of ninety miles northward of the Missouri river at Yankton; or say fifty miles north of the southern boundary of Minnesota extended. This area includes the counties of Union, Clay, Yankton, Bon Homme, Charles Mix, Douglas, Hutchinson, Turner, Lincoln, Minnehaha, McCook, Hanson, Davison, Aurora, Brule, Buffalo, Jerauld, Sanborn, Miner, Lake, Moody; also the corresponding section west of the Missouri river and a large part of the Black Hills country. Of course it is not meant that corn will not grow north of this section. As a matter of fact, excellent fields of corn have been grown in all parts of South Dakota, but there is more risk in the northern part of the State then in the southern part. In the bottom lands of the Missouri 75 and 100 bushels to the acre are not unusual yields, but as one goes northward the yield is less and the danger from early frost is greater. The region included in the counties named is the oldest settled in part of the State. The farmers have raised excellent crops of wheat and other small grain, but after all, the wealth has been derived mostly from corn, hogs and cattle. Again, this pamphlet says, in referring to the leading production of this section:

CORN.

In the future, corn is to be the principal cereal for that part of South Dakota, which is particularly talked of in this pamphlet. * * * In the older counties there are farmers who are worth from $25,000 to $100,000 and the foundation of their wealth was corn. In the southeastern portion of the State corn never fails to ripen. The stalks reach a height of from eight to sixteen faet, and the well filled ears sometimes run from twelve to fifteen inches in length. All varieties ripen, though Deut is the favorite. On some of the best bottom lands 100 bushels per acre have been gathered, though on the average the farmer expects from forty to fifty bushels. The corn is always of excellent quality and in weight overruns the standard. The writer might have added that it stands the highest in merchantable qualities (97 per cent) of any corn raised in the United States. (See table from U. S. Statistics, this book.)

To stimulate interest in their leading productions, the corn producers of this part of the State have inaugurated a series of exposition, or “corn palaces, the first of which was held at Mitchell in September, 1893. A beautiful and highly artistic exposition, or corn palace, was constructed, in which the exhibits from every county of the corn belt were displayed, and it was the concensus of opinion of all beholders that they had never been surpassed by any similar exhibit.

All that part of the State east of the Missiouri river and north of the corn belt may be distinctively designated as the wheat belt, as that cereal has heretofore been the leading production of that part of the State. The great wheat fields of this part of the State scarcely need a reference here, where it is well known that a single county, like Brown, or Spink, or Clark, will, in a favorable year, produce a quantity aggregating nearly as much as some of the smaller nations of Europe. For example, the total number of bushels of grain raised in Holland for the year 1894 was 5,155,000 bushels and for Denmark 5,100,000 bushels, which yields are little greater than some of the above counties have shown in a single favorable year in the past.

The annual expositions, or state fairs of the State, are held at Aberdeen, in the “wheat belt” division of the State. That of the year 1893 was especially fine, and the representation of the State, general.

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POPULATION.

The Following Table, from the United States Census Returns, Shows the Population of the State by Counties.

POPULATION OF SOUTH DAKOTA, 328,808.

COUNTIES.	Population.	COUNTIES.	Population.
Aurora	5,045	Lincoln	9,143
Beadle	9,586	Marshall	4,544
Bon Homme	9,057	Meade	4,640
Brookings	10,132	Miner	5,165
Brown	16,855	Minnehaha	21,879
Brule	6,737	Moody	5,921
Buffalo	993	McCook	6,448
Butte	1,037	McPherson	5,941
Campbell	3,510	Pennington	6,540
Charles Mix	4,178	Potter	2,910
Clark	6,728	Roberts	1,997
Clay	7,509	Sanborn	4,610
Codington	7,037	Spink	10,581
Custer	4,891	Stanley	1,028
Davison	5,449	Sully	2,412
Day	9,168	Turner	10,256
Deuel	4,574	Union	9,130
Douglas	4,600	Walworth	2,153
Edmunds	4,399	Yankton	10,444
Fall River	4,478	Gregory	295
Faulk	4,062	Harding	167
Grant	6,814	Ziebach	510
Hamlin	4,625	Pratt	23
Hanson	4,267	Presho	180
Hand	6,546	Pyatt	34
Hughes	5,044	Nowlin	149
Hutchinson	10,469	Scobey	32
Hyde	1,860	Sterling	96
Jerauld	3,605	Todd	188
Kingsbury	8,562	Martin	7
Lake	7,508	Washington	40
Lawrence	11,673		

THE SUGAR BEET.

The question of the establishing of sugar beet culture in this State has been one of interest during the past two years and has attracted considerable attention throughout the State. It is claimed that in only a certain belt of the earth's surface can this industry be profitably carried on and that the State of South Dakota is within this belt. During the last biennial period the Agricultural College at Brookings has taken up the work of experimentation on this subject and the results of these experiments were given to the public by its "Bulletin No. 34" issued in April of last year. The information and statistics therein contained seem to be of such importance as to require perpetuation and further publicity and I give them entire, as follows, viz.:

SOUTH DAKOTA AGRICULTURAL COLLEGE AND EXPERIMENTAL STATION, BROOKINGS, S. D.

James H. Shepard, Chemist.

WORK AT THE EXPERIMENT STATION.

Sugar Beets from Home Grown Seed.—Of the six varieties of mother beets planted from seed, three varieties were lost after the seed had fully matured. These beets were planted on the station farm and were destroyed by sheep. The remaining three varieties were planted in my own private garden and the seeds obtained were sown last spring. The names of these varieties are Dieppe's Klein Wanzlebener, Pajaro Valley, and Simon Legrand's White Improved.

As already reported in Bulletin No. 27 of this station, the three mother beets selected of the variety Klein Wanzlebener gave respectively 15.70, 17.40 and 15.61 per cent sugar in the beet after storing in the farm barn cellar until May 11-14.

The two Pajaro valley mother beets selected gave 15.31 and 15.51 per cent sugar in the beet under like conditions.

The two Simon Legrand mother beets gave 15.11 and 15.61 per cent sugar in the beet under the same conditions.

These percentages are here repeated in order that a comparison between the sugar content of the mother beets and that of their offspring can be more conveniently made.

Owing to the cold and rainy weather during the spring these beets did not germinate until the last of May, although the seed was sown April 29. The ground selected for the trial was chosen from the Horticultral garden and was a dark sandy loam situated rather high and sloping towards the east. The rows were 22 inches apart and ran north and south. Before the beets came up a crust was formed over the ground by the hot sun and this crust was broken by means of a garden rake. Nearly a full stand of beets was obtained. The few breaks which did occur in the rows was caused by the extraordinarily heavy rain which fell in the fore part of May. Streams of water ran across the rows and washed some of the seed out of the ground and carried it away, notwithstanding the fact that the seed was planted at least two inches deep by means of a hand drill.

The seed bed was made by plowing the ground twelve inches deep early in the spring, after which it was firmed by repeated dragging. No subsoil plow was used, in order that the conditions might be as near like those under which the mother beets were raised. No fertilizer was employed nor had any been used on the plat for the past two years. Corn was the last crop grown.

The beets were first planted with a hand cultivator, after which they were hoed and thinned by hand to 5 inches in the row. They were subsequently cultivated and hoed twice. The beets of all three varieties were well formed and free from disease, and the appended analysis shows that for sugar making purposes they are first-class in every respect. In column 1 is given the analysis of the Klein Wanzelbener variety. In column 2 that of Pajora Valley, and in 3 and 4 that of the Simon Legrand. All these analysis were made on August 25, excepting the last, which was made August 26. In each analysis six beets were used.

	(1)	(2)	(3)	(4)
Station No.	389	388	390	420
Average weight of beets in grams	329	282	253	296
Sugar in beets, per cent	18.70	15.50	18.20	18.10
Sugar in juice, per cent	19.66	16.23	19.27	19.11
Degree Brix	20	19	21.30	20.10
Purity coefficient	98.30	85.42	90.46	95.07
Ash in juice, per cent	.76	.70	.43	.59
Marc	4.91	4.48	5.54	5.28
Tons per acre	18	19.5	18	------

From an inspection of the foregoing analysis and from a comparison of the sugar content of the mother beets with that of their progeny it will appear that after making due allowance for the unavoidable loss in storing the mother beds, the beets grown from home seed have retained their high standard; and that in case the sugar industry should become established in our midst it would be unnecessary for us to rely upon foreign importations for our seed supply. Enough of each variety of these beets to raise seed for one-half acre were carefully packed in dirt and stored in the green-house cellar, but owing to the gross carlessness of an employee of the station they were fed to stock and thus much valuable time has been lost.

Importation of Seed.—In view of the fact that pedigreed and carefully grown seed is one of the first requisites of successful beet-growing, the station council voted to import two sacks of the best seed obtainable. Accordingly arrangements were made with Messrs. August Roelker & Sons, 136 and 138 W. Twenty-fourth street, New York, whereby this station secured direct from the grower, August Knoche, one sack each, weighing about 110 pounds per sack, of that celebrated grower's strain of the Klein Wanzlebener and Vilmorin types. The sacks were received at this station with their leaden seals intact and inside of each sack was a tag placed there by the grower. In the Vilmorin sack to grower's tag was marked "*No. 1 Zuckerrueben Samen Knoche's Verbesserte Zuckerreichste Elite, eigene Zuchtung Aug. Knoche, Wallwitz B. Halle, a. s.*" In the Klein Wanzlebener sack the tag bore the same legend except the grower's name for the variety, "*Knoche's Verbasserte Klein Wanzlebener Elite.*" These varieties will be referred to hereafter simply as of the Vilmorin and Klein Wanzlebener types, deeming the foregoing explanation as to the origin of the seed sufficiently explicit.

The sugar beet seed thus obtained was distributed to farmers throughout the state. But in order to test this seed beside that grown at this station a trial plat of each kind was sown immediately beside those previously described in the horticultural garden and the same treatment was given to all. Consequently the analysis will complete the report.

In the following table are given the analysis of both varieties. Columns 1, 2 and 3 show separate analysis of the Klein Wanzlebener variety made respectively on October 13, 18 and 25.

	(1)	(2)	(3)	(4)
Station No	382	383	387	386
Average weight of beets in grams	346	406	322	378
Sugar in beets, per cent	15.40	15.60	15.50	15.30
Sugar in juice, per cent	16.20	16.25	16.15	16.09
Degree Brix	17.20	17.70	19.40	21
Purity coefficient	94.20	91.80	83.25	76.66
Ash in juice, per cent	.86	.84	.88	.81
Marc	4.92	3.97	4.35	4.92
Tons per acre	23.5	-------	-------	19

From even a cursory inspection of the foregoing analysis it will appear that thesr varieties gave good results with some advantage in favor of the Klein Wanzlebenee type.

Distribution of Seed.—In the preceding bulletin on sugar beets the announcement was made that seed would be sent to those farmers who applied for it and who would promise to follow directions for cultivation. But the number of applicants who could be furnished with seed would be limited to the first four hundred who applied. Something over four hundred applications were received, and as promised four hundred samples of seed were distributed. With each sample sent out was enclosed the the following circular of instructions:

"BROOKINGS, S. D., March, 1892.

"DEAR SIR:—Within you will find a sample of the best imported sugar beet seed› variety........................ This seed is sent out by this station for the purpose of ascertaining if our state is well adapted to the successful culture of beets sufficiently rich in sugar to warrant the establishing of sugar beet factories as a permanent industry among us.

"Over, you will find explicit directions for beet sugar culture and you are earnestly urged to follow the directions exactly. All the points noticed are essential and none of them can be safely neglected.

"Next fall directions for taking samples of beets for analysis will be sent you in due time. Please do not harvest the beets nor send samples until you receive notice from this station.

"At the time the notice is sent a blank calling for some important information which you alone can give will also be sent. Therefore, if you will kindly put down the exact date when the beets are sown and also note from month to month what the prevailing weather for each month during the growing season is, you will be able to fill out the blank correctly in a few minutes time.

"Do not mix the seeds with any other variety."

DIRECTIONS FOR BEET CULTURE.

"1. Selection of Soil.—Choose rather high sandy soil which has not been manured since the last crop was taken off. Also do not apply any fertilizers this year.

"2. Preparation of Seed Bed.—Having selected the ground to be used, measure off a plat one rod wide and four rods long; or you may take a plat two rods square. This will give you one-fortieth of an acre. Now plow the ground deep, at least twelve inches. Then by means of much dragging, or by means of a roller or plank, make a good, firm seed bed of finely pulverized earth.

"3. Sowing the seed.—Now lay off on the prepared seed bed rows exactly 22 inches apart. There will be nine rows if the plat is one rod wide, or eighteen rows if it is two rods wide, sow the seed the last week in April or the first week in May, according to the weather. Do not fail to get the seed in this early. Plant the seed from one to two and one-half inches deep depending upon the dampness of the ground. The seed must be in damp earth. The seed may be sown by hand or a garden drill may be used. There is just enough seed in the accompanying package to sow the plat as prepared. Use all the seed on one plat, so the young plants may come up thickly. If the ground is dry at time of seeding it will be well to soak the seed twelve hours before planting, but they must not be allowed to sour or ferment, as this will spoil the seed.

"4. Thinning and Cultivation.—When the young plants have four to six leaves, go over the plat with a hoe, hoeing close to the rows. Now go over each row by hand, thinning out the beets so that the plants may stand from four to six inches apart. Also remove all the weeds. From this time on the beets may be cultivated by hoe or horse cultivator to keep free from weeds and to keep the soil mellow. The beets are not to be exactly hilled up, but it is best to work the soil towards the beets. The ground must not be allowed to crust over or to cake and crack."

Arrangements were also made to have two acres of sugar beets raised, one on the Station farm and one on the farm of Hon. D. W. Diggs of Milbank. The object of this was to ascertain the actual cost of producing the beets under existing circumstances. But the floods which fell in the early part of May nearly ruined both plats. It seems that both plats were on gently sloping ground and the water washed the seed away. In both cases the cost of production would more than exceed the value of the beets raised.

Owing to the fact that the heavy cold rains in May were followed by clear hot weather the sugar beet plats were soon crusted over to such an extent that it was difficult for the young plants to break through the soil. Under the circumstances it was deemed best to issue a Press Bulletin and give supplementary advice in regard to the treatment of the plats. The Bulletin follows:

SUGAR BEETS.

"It is now time that the various plats of sugar beets throughout the State were thinned and hoed and the ground put in the best possible condition for the growth of the young plants. The thinning may be expedited by hoeing first as close to the row as possible. Then it is absolutely necessary that each row should be gone over separately by hand. The beets are now all to be removed excepting enough to give one plant every four to six inches. In leaving the plants it should always be the aim to leave the thriftiest and most vigorous growers. Great care must be taken that two plants are not left growing side by side, as it often occurs that two plants will grow up together and appear as only one. If they are both left neither will reach perfection.

The late cold rains during the season have been unfavorable to the beet crop, not only in this State, but everywhere. From France, Germany and Russia the same backward condition is reported. The germination of the seed was much delayed by cold rains and in some places where the ground was slightly sloping some of the seed was washed out while other portions were buried too deep. But what was worst of all was the crust that formed over the ground. By digging through the crust the young plants would be found growing around and around in a spiral seeking to emerge into the air above. Any little crack that would afford egress was diligently sought for by the tiny plant struggling to free itself. This was a severe strain on the plant even though it finally did succeed in coming through. Its vital forces were much awakened. But this same state of affairs is reported everywhere.

The stand in many cases will be irregular. But it does not make any difference about the necessity for thinning. All bunches in these irregular rows must be thinned just as carefully as in full rows.

A little good careful work now with the experimental plats will go far towards making up for a late spring. The ground must be kept mellow and this will go far toward removing the coldness of the soil. Neither must the weeds be allowed to choke out or even to shade the young plants. The beet delights in the sun shine, therefore the ground must be kept clean.

It is probable that the beets will be late in ripening this fall, but as soon as they begin to approach maturity analysis will be made and ample warning will be sent to all growers in the state. One bad mistake in the past year has been made in sending in immature samples. When the sugar beet has made its growth it still needs to stand in the warm sunny ground in order to finish the process of making sugar. There is not much sugar in the beet when it is growing. The sugar is made after growing has ceased. The last few days in the fall are worth more than a month at any other time.

Growers are, therefore, cautioned not to harvest their beets until they receive notice from this Station. Give the plats good care and we may still reach good results."

Notwithstanding the unfavorable outlook early in the season the summer and fall proved favorable for the growth ot the sugar beet and better results than could have been expected were obtained. The warm dry, bright weather which prevails during the fall months in this climate is most favorable to the ripening of the sugar beet. As a rule damaging frosts do not occur until about the middle of November. The lighter and earlier frosts scarcely seem to effect the tops of the sugar beets. One suggestion however might be useful in this connection and that is low growing varities of beets that make their growth completely under ground will be found best adapted to this dry climate. Moreover the later hoeing and cultivations should be so carried on as to work the dirt toward the beets in order to protect the crowns from the bright sun and from any of the earlier frosts. The sugar beets that were saved for seed at this Station were not harvested until the 10th of November. The beets had been ripe for nearly thirty days.

As soon as the beets reached maturity directions for sampling and shipping were sent as follows:

DIRECTION FOR TAKING SAMPLE OF SUGAR BEETS FOR ANALYSIS.

"Select an average row, one of the inside rows is best. Measure off exactly 23 feet and 9 inches on that row and harvest all the beets in the distance measured. If so long a piece cannot be found in one row it may be partly taken from two or more rows.

Cut off the tops of the beets and wash the beets. As soon as dry weigh them and divide the weight in pounds by 2. The result will be the tons per acre. This calculation is based on the supposition that you have planted the rows 22 inches apart as instructed. In case yon have made the rows a different width you cannot get the tons per acre by dividing by 2. In such case, follow the foregoing directions, (and give the width of the rows,) but leave the computation for us to make.

A pair of steelyards or a spring balance will answer for weighing the beets if no scales are handy.

Select five average sized beets, wrap each one in a paper and place them in a sack. Now fill out the blank on the other side of this sheet, place it in an envelope and place in the sack with the beets. Tie up the sack, attach the enclosed shipping tag and forward to us by express. We will pay the express charges.

N. B.—Do not send the largest beets you have raised as they are not fit for sugar making. Do not send the smallest as the they are not ripe. Send *average* sized and perfect beets. The best beets for sugar making weigh from three quarters of a pound to a pound and a half. If any beets grew seed stalks do not send them for analysis."

About the usual per cent. of experimenters reported and returned samples. But one thing is noteworthy, and that is, very few who reported and did not return samples gave as a reason therefore a failure of the crop. Stock destroyed some plats, the heavy rains washed out a very few, some were neglected and some growers were too busy to attend to sampling the beets and others forgot all about them.

The samples on an average were taken with greater care than in previous years, but some clinging to the delusive belief that the largest beets were the best, and in spite of the explicit instructions given, sent the largest beets raised, beets that evidently came from the ends of rows or from thin places in the row.

On the whole the results obtained are satisfactory. The season could not be called more than the average and after due deliberation the station council voted to discontinue further work in the State and this action was approved by the Board of Trustees.

EXPERIMENTS THROUGHOUT THE STATE.

For the same reasons assigned in the last Sugar Beet Bulletin the State is divided into four regions:

The Big Sioux Valley and Eastern Region embraces all that portion of the State east of the eastern water-shed of the James river.

The James River Valley Region is a well-marked district, most of which is situated over the artesian basin in South Dakota. This region has many advantages for sugar beet culture.

The Missouri River Region extends from the western water shed of the James river to the Missouri river. The tier of counties west of the river are but sparsely inhabited toward the northern portion of the State.

The Black Hills Region, as is well known, embraces the rich mining regions of western South Dakota. There are many fertile valleys and level plateaus throughout this region, where farming is carried on; and it is from these places that the samples of this year have come.

THE BIG SIOUX VALLEY AND EASTERN REGION.

Ninety-four samples of seeds were distributed to this region. The following notes have been gleaned from the reports sent in by experimenters.

Marshall County.—Six packages of seed were sent to this county and two samples of beets were returned. Mr. Linse reports that the soil was heavy and was manured a year before the beets were sown. Mr. Blackman used light, sandy soil with no fertilizer. May and June were wet and cold. July was rainy, August was hot and dry, some local rains in September and October was dry until the 12th, when it rained two days.

Roberts County.—Three samples were sent to this county and none of them have been heard from.

Day County.—Nineteen samples of seed were sent to this county and seven returned beets. May was wet and cold; June warm with heavy showers; July plenty of rain; August warm and dry; September warm and dry; October dry and cool, hard frost the 20th. Mrs. Resseguie sowed the seed in black loam and the beets grew very large. Mr. Atkins sowed on clayey land with no fertilizer; a fine stand reported. Mr. Sanders sowed on prairie loam that had been fertilized in 1891 with stable manure. Many beets grew large, one of the largest weighing ten pounds. Mr. Heydlauff used black loam ten inches deep with yellow clay subsoil, manured the previous year. Mr. Johnson used black sandy loam. He divided his seed and sowed part on old ground and part on new. (456.) Mr. Lewis sowed on black loam never fertilized, and reports plenty of rain all the season. Mr. Reed used sandy black loam never fertilized. Beets came up thin and poor, owing to cold weather.

Grant County.—Twenty one samples of seed were sent out to this county and nine experimenters returned beets. May was cold and rainy, rainfall 8.8 inches; beets washed out; June, much rain, temperature ranging from 41 to 58 minimum and 59 to 83 maximum; rainfall, 3.3 inches. July, total rain, 3.80; temperature, 48 to 68 minimum, 70 to 94 maximum. August, total rain, 6.66 inches; temperature 40 to 64 minimum, 56 to 92 maximum. September, first part rainy; lastly, dry and warm. October, dry and warm.

Mr. Ferry selected a black loam with little sand. The land became hard and lumpy owing to the rain. Mr. Diggs selected a black loam on a sloping ground. He has kindly consented to raise one acre for the purpose of determining the cost. He had some transplanted, but the cost of raising far exceeded the income of the beets.

Mr. Armstrong used new land only cropped once previously. Mr. Kelley planted on black loam with clay subsoil. Mr. Johnson used a piece of old garden land, sandy loam. Mr. Priest planted on black loam and had a good stand in spite of the fact that the ground became hard. Mr. Lloyd planted on new ground which had one crop of potatoes previously. Mr. Holloway used slightly rolling ground. Mr. Hicks planted on sandy loam and beets germinated well.

Codington County:—Four samples of seed were sent to this county and only one man reported. Mr. Skogstad planted on high prairie and his beets did not germinate well owing to a heavy rain right after planting. He reports the weather substantially as from the preceding county except frost in the latter part of October.

Deuel County:—Mr. Comport was the only applicant for seed from this county he planted on black loam with clay subsoil. The plat was part of a garden that had been manured with stable manure for the past eleven years. Although the garden on rising ground it was submerged three times with heavy rain. Weather similar to preceding county. Shorp frosts October 19th, 20th and 21st. He states that at least five per cent of beets grew prongy which he attributes to deteriorated seed.

The real cause was that his ground was not plowed deep enough and properly pulverized.

Hamlin County:—Five samples of seed were distributed in this county and three samples of beets were returned. Mr. Jardine sowed the seed on upland with surface soil two feet deep. Beets came up uneven on account of cold wet weather. The weather report for this county was similar to that of last county. Mr. Walker planted on black loam manured the previous year. Mr. Payne used rolling upland which had been in oats the previous year.

Brookings County:—Ten samples of seed were sent to this county and eight experiments returned beets for analysis. The Station Farm plat covered one acre. It was plowed eight inches deep and subsoiled four or five inches. The ground was well prepared and was only a slightly sloping piece of land facing north. Owing to the cold wet weather the seed was not sown until the 16th, on the 17th a heavy rain exceeding two inches fell within the space of about one hour. The water rushed down the slope and carried the seed of some rows away and cut the piece into deep gullies. The intention was to raise this acre of beets just as would obtain in actual practice. The heavy rain spoiled the experiment.

The weather for this county was similar to that of the last mentioned. Mr. Devan used sandy loam without fertilizers. Cattle ate the tops of the beets in September and damaged the plat otherwise. Mr. Hendrikson used summer fallow of the previous year, plowing again in the spring and the piece was never fertilized. Mr. Pike planted on sandy loam sloping to the south. The directions were carefully followed. Mr.

Quinlan sowed on a rich loam, but his beets stood so far apart that the results were poor. Mr. Sundt planted on sandy soil manured the year before and plowed in the fall. The directions were followed and the results were good. Mr. Honan used a sandy, gravelly loam manured the previous year with stable manure. Mr. Pool used black loam plowed very deep and not manured for two years.

Lake County:—Eleven samples of seed were sent to this county and four experimenters returned beets for analysis. The weather reported is for May 1st, half dry, a few showers. August hot and dry and September the same. October dry.

Mr. Rankin used black loamy land between two rows of trees that had been mulched five years ago. The beets were not shaded. Mr. Huyzer used black loam with a little sand in it. Used stable manure the year before and planted to potatoes. The beets were rough being affected with a species of scab. Mr. Whitmore used horse manure on the land the previous year.

Moody County.—Two samples of seed were sent to this county and one sample of beets was returned. Mr. Haskins sowed on upland fertilized the previous year with fresh barn yard manure and planted to corn. He reports the weather about the same as in the preceeding county except more rain in May.

Minnehaha County.—Six samples of seed were sent to this county and two samples of beets were returned. Weather reported similar to last excepting many frosts in October. Mr. Grant planted on common prairie soil and the first sowing was partly washed out. A second sowing was made on the 22. Mr. Oleson planted on sandy loam and his stand was irregular in the rows, the single beets often standing thirty inches apart.

McCook County:—Mr. Patheol was the only applicant for seed from this county whose application came in ttme. He planted on upland and thinks the crop is easily raised in his county.

Lincoln County.—Four packages of seed were sent to this county and two samples of beets were returned. The weather reports are the same as in last county no mention being made of frosts in October. Mr. Myhre sowed on sandy loam and reports that most of his beets weigh three pounds each. Mr. Olin also sowed on sandy loam and reports that his beets grew very large many weighing six pounds.

The following tables complete the reports for this whole region. Under the heading, "variety" the letters K and V are used to denote respectfully the Kleinwanzlebener and Vilmorin types as previously explained. Under the heading "pounds sugar per acre" is given the total pounds sucrose raised. It does not follow that that many pounds would be extracted at the factory. Much depends upon the processes used and upon how skillfully the operations are conducted:

Station Number.	Variety.	Grower.	Planted.	Harvested.	Rows—Inches.	Beets in Rows—Inches.	Tons Per Acre.	Number Beets Analyzed.	Average Weight—Grains.	Per Cent Sugar in Beets.	Per Cent Sugar in Juice.	Degrees Brix.	Purity Coefficient.	Per Cent Ash in Juice.	Per Cent Marc in Beets.	Pounds Sugar Per Acre.
		MARSHALL COUNTY—														
539	K	L. E. Blackman	May 1	Nov. 1	22	7	10.	5	320	17.57	18.50	22.60	81.42	--------	5.	3,514
535	K	H. R. Linse	April 28	Oct. 28	20	4	10.	5	470	14.60	15.40	21.	70.	--------	5.	2,920
		DAY COUNUY—														
437	K	Mrs. S. Resseguie	May 27	Oct. 21	36	8	------	5	453	10.70	11.17	16.50	67.70	1.22	4.22	--------
445	V	H. A. Atkins	May 16	Oct. 28	22	5	27.	5	510	13.25	13.84	18.	76.89	1.07	4 31	7,155
449	K	N. Sanders	May 16	Oct. 25	22	6	45.	4	830	13.20	13.71	18.10	75.75	1.38	3.74	11,880
452	K	H. J. Heydlauff	May 12	Oct. 28	22	5	20.	5	182	13.90	14.57	19.10	76.28	1.14	4.60	5,560
455	K	T. E. Johnson	May 10	Oct. 29	20	5	14.3	3	544	15.	15.79	18.60	84.52	1.12	4.55	4,292
456	K	T. E. Johnson	May 10	Oct. 29	20	5	14.3	3	390	14.65	15.38	18.40	83.59	1.30	4.79	--------
494	V	L. W. Lewis	----------	Oct. 26	22	------	------	4	479	13.10	13.73	17.20	79.83	1.01	4.62	--------
528	K	S. J. Reed	May 9	Oct. 28	24	------	17.	5	629	11.50	12.	15.80	76.	.85	4.20	3,910
		GRANT COUNTY—														
399	K	W. H. Ferry	May 24	Oct. 21	20	6	18.	5	404	16.50	17.35	20.50	84.64	.98	4.92	5,940
401	K	D. W. Diggs	May 2	Oct. 22	22	4	28.	4	751	15.20	15.89	18.50	85.89	1.11	4.37	8,512
434	K	W. F. Armstrong	May 12	Oct. 20	22	------	------	4	735	15.20	15.87	17.80	89.16	1.01	4.24	--------
459	V	Edgar Kelly	----------	----------	------	------	------	4	713	10.80	11.23	15.60	71.99	1.52	3.87	--------
465	V	Nels Johnson	May 6	Oct. 28	22	18	12.5	4	914	15.60	16.29	17.40	93.62	1.20	4.23	3,900
478	K	J. V. Priest	June 3	Oct. 24	22	7	40.	4	713	10.30	10.68	14.90	71.68	1.59	3.55	8,240
517	V	F. P. Lloyd	May 15	Nov. 3	44	12	------	4	1,125	14.30	14.90	17.	87.60	.72	3.97	--------
526	K	Wm. Halloway	May 16	Nov. 5	22	6	32.	4	610	14.	14.60	18.20	80.20	.98	4.28	8,960
540	V	Jno. Hicks	May 4	Nov. 10	22	6	30.	5	520	17.20	18.10	19.20	94.80	--------	5.00	10,320
		CODINGTON COUNTY—														
443	K	N. A. Skogstad	May 12	Oct. 25	22	6	15.	5	574	11.90	12.42	16.20	76.66	1.23	4.19	3,578
		DEUEL COUNTY—														
397	K	Thos. Comport	May 25	Oct. 21	22	10	10.5	4	724	14.60	15.35	19.	80.79	1.19	4.89	3,066
		HAMLIN COUNTY—														
496	K	John Jardine	May 10	Oct. 26	22	6	32.	4	703	12.25	12.74	16.	79.65	.98	3.85	7,840
512	V	B. W. Walker	April 30	Oct. 24	22	8	12.	5	456	16.50	17.40	20.	87.	.82	5.40	4,000
527	K	R. T. Payne	June 28	Nov. 2	48	8	17.	5	386	11.80	12.36	15.80	78.	1.01	4.23	4,010
		BROOKINGS COUNTY—														
384	V	Station Farm	May 16	Oct. 19	22	5	19.	5	374	13.	13.58	16.53	82.15	.86	4.30	4,940
384	V	Station Farm	May 16	Oct. 25	22	5	19.	6	175	14.50	15.41	22.	70.05	.60	5.80	4,940
384	V	Station Farm	May 16	Oct. 27	22	5	19.	6	309	14.70	15.51	17.46	89.14	1.05	5.22	4,940
391	K	H. P. Devan	April 28	Oct. 20	22	6	38.	5	443	14.50	15.13	16.	94.56	1.03	4.18	11,020
398	V	H. Hendrickson	April 26	Oct. 24	22	6	20.	3	490	14.90	15.61	18.60	83.92	.90	4.54	5,960
406	V	J. S. Pike	April 30	Oct. 24	22	5	32.	5	628	12.30	12.85	17.	75.50	1.25	4.29	8,872

Station Number.	Variety.	Grower.	Planted.	Harvested.	Rows—Inches.	Beets in Rows—Inches.	Tons Per Acre.	Number Beets Analyzed.	Average Weight—Grams.	Per Cent Sugar in Beets.	Per Cent Sugar in Juice.	Degrees Brix.	Purity Coefficient.	Per Cent Ash in Beets.	Per Cent Marc in Beets.	Pounds Sugar Per Acre.
408	K	M. Quinlan	May 18	Oct. 22	44	12	15.	3	933	10.20	10.63	14.50	73.31	1.38	4.04	3,060
448	K	O. J. Sundt	May 7	Oct. 28	22	6	32.	4	630	13.20	13.76	18.80	73.19	1.52	4.10	8,448
484	V	M. Honan	May 16	Oct. 29	22	4	40.	4	638	14.50	15.15	19.	79.74	.95	4.31	11,600
485	V	Z. Pool	June 1	Oct. 20	14	18	------	3	1,080	9.40	9.74	14.40	67.64	1.34	3.40	--------
		LAKE COUNTY—														
415	K	J. R. Jones	May 15	Oct. 24	18	4	46.	5	536	13.20	13.80	17.30	80.	1.34	4.33	12,092
463	K	A. L. Rankin	May 2	Oct. 28	22	5	20.	5	542	13.70	14.18	18.	79.33	1.53	4.06	5,549
492	V	J. S. Hyzer	May 18	Oct. 26	46	8	15.	8	262	14.55	15.19	19.30	78.70	1.20	4.19	4,365
533	V	William Whitmore	May 20	Oct. 22	30	2	22.	5	631	14.65	15.50	18.90	82.	1.08	5.23	6,446
		MOODY COUNTY—														
440	V	E. S. Haskins	April 28	Oct. 18	28	------	------	4	891	13.35	14.	18.20	76.92	1.13	4.64	--------
		MINNEHAHA COUNTY—														
431	K	G. A. Grant	May 17	Oct. 22	24	6	25.	4	631	15.50	16.27	19.	85.62	1.22	4.77	7,750
504	V	Olaf Olson	May 15	Oct. 19	22	------	19.	3	1,099	9.50	9.90	13.	76.	1.59	3.62	3,800
		McCOOK COUNTY—														
461	K	A. C. Patheal	May 1	Oct. 29	22	5	20.	5	575	13.	13.54	16.80	81.19	1.09	4.	5,200
		LINCOLN COUNTY—														
470	K	Anthony Myhre	----------	Nov. 4	------	10	------	5	646	16.50	17.32	19.50	88.82	.93	4.72	--------
479	V	James Olin	May 20	Oct. 22	18	5	54.	3	827	15.50	16.13	18.20	88.90	.98	4.24	16,740

THE JAMES RIVER VALLEY REGION.

Brown County.—Thirty-nine samples of seeds were distributed in this county and twelve samples of beets were returned. The weather is reported: May, cold and wet. June, first part cold with heavy rains; balance favorable. July, very dry and hot. August, warm with plenty of showers. September, fairly warm and dry. October, first part very warm, with frosts in latter part.

Mr. Fulker planted on black loam with some clay in soil. Mr. Narregang planted on black loam and he sends in the best sample from this county. Mr. Hansen planted on high sandy loam. The beets were not properly thinned out. A heavy wind storm in June drifted sand over many of the young plants, which received no further attention. Mr. Webber planted on black loam that was too low for the wet weather. Mr. Matteson planted on black loam with clay subsoil plowed ten inches deep. Mr. Vetter planted on black loam and the wet weather interfered with the cultivation of the beets. Mr. Miller planted on creek bottom. Mr. Coburn planted on light, sandy soil fertilized with stable manure and plowed under May 10. Mr. Edson planted on black prairie loam a little sandy in character. The cold, wet weather interfered with germination. Mr. Crockard used sandy loam with no fertilizers. Mr. Moody planted in black loam, which had been used for a garden four or five years.

In August the long-legged potato bug destroyed the tops of the beets. New tops were immediately thrown out, but this so delayed the ripening of the beets that the per cent of sugar was low at the time of harvesting. Mr. Svarstad used no fertilizers.

McPherson County.—Only too applications for seeds were received from this county, and one sample of beets was returned. Mr. Reid planted on sandy loam, and although his beets were not large they were exceptionally fine for sugar making.

Edmunds County.—Eighteen packages of seed were sent to this county and five samples of beets were returned.

The weather reports are the same as from Brown county, frosts occurring after the 18th of October. Col. Brown planted on black sandy loam so level that at times the beets were covered with water. Mr. Dickinson planted on sandy loam and used no fertilizer. Mr. Bergman planted on black loam. Mr. Bakkegard planted in good deep soil and does not understand why the beets did not grow longer and larger. He had a very fine lot of beets for sugar-making, and the beets grew just as they should have grown. Mr. Hilton planted on black loam between gravel knolls, and had a fine even stand all over the plat.

Faulk County.—Eight packages of seeds were sent to this county and three samples of beets were returned. The weather reports are similar to the foregoing with the exception that hail is reported for July 20th.

Dr. Wentworth planted both varieties of beets sent to him on dark sandy loam and no fertilizer. Mr. Thompson planted on black loam that was manured four years ago. On the 20th of July hail cut off all tops of the beets, but new ones immediately grew, and from the final results, it will be seen that the sugar beet is a hardy plant.

Spink County.—Eighteen samples of seeds were sent to this county and nine samples of beets were returned. The weather reports are the same as in Brown county.

Mr. Else planted on creek bottom sandy land, and used no fertilizer. Mr. Sander planted on black soil and the beets grew rather small. Mr. Perkies planted on sandy loam, which had the wash of the barn yard. On the tenth of June a heavy rain fell, accompanied with hail which destroyed many of the little plants.

Mr. Thomas planted on sandy loam and used no fertilizer. Mr. Brunn planted on black loam beside mangels, and his beets grew too large, owing to the great width of the rows, many beets weighed from 8 to 9¾ pounds each. Those sent were under medium size. Mr. Bingham used black prairie soil with no fertilizer. He planted too far apart, and in the rows the beets stood from six to shirty inches apart.

Mr. Carrier planted on a plot of ground that was just on the brow of a run, and the soil was considered to be of a poor quality as it washed into the run. The beets came up finely, but a snow storm three weeks after planting killed about three-fourths of the young plants. These were replaced by transplanting when the crop was thinned, thus securing almost a perfect stand. The subsoil was gravelly, and the beets grew long and perfect, some being two feet in length. Mr. Wilson sowed both varieties on light prairie soil, and the stand was rather uneven. He thinks the Vilmorin strain would yield six times as much per acre as the other variety.

Clark County.—Sixteen sampies of seed were sent to this county, and six packages of beets were returned. The weather report is about the same as for the other counties in this region.

Mr. Westover planted on black loam that was not plowed deep enough nor was it sufficiently pulverized. The ground became packed very hard. Mr. Waterman planted on black prairie loam. He asks why the seed is sown so thickly, and then more than three-fourths of the plants afterwards pulled up. The reason for this is, it is absolutely necessary to have a full stand of beets in order to produce the best beets for sugar making. If the beets are too far apart they grow to gross and they take up so much mineral matter that a large proportion of the sugar in them will not crystalize out in the process of manufacture, and the non sugar also accumulate and tend toward the same result. Sowing the seed thickly provides against accident, and insures enough plants to make a full stand. Mr. Peterson used rich black soil sloping toward the south. Mrs. Shulz used high sandy soil, and the poor results given in the analysis are unaccountable, unless the beets grew new leaves late. Mr. Howey planted on gravelly loam, which was plowed shallow. Mr. Weston planted on heavy clay loam, which was sloping. The heavy rains washed the seed down into the bordering ditch, and the stand was too thin in many places. In these places the beets grew to an enormous size.

Hand County.—Six packages of seed and two samples of beets make the report for this county. The weather is reported as before noticed. Mr. Pash planted on sandy loam, and used no fertilizer. Mr. Jones used upland that was loose and mellow.

Beadle County.—Nine packages of seed were sent to this county and four samples of beets were received. The weather report is like that of the preceding county.

Mr. Fuller planted on sandy loam that was fertilized last year. Beets made second growth in September. Mr. Keator planted on black loam and his beets grew large and scobby. Beets made new tops in October, which accounts for the low per cent of sugrr. Mr. Campbell planted on black loam not fertilized, and had a fine stand of beets. Mr. Sprague planted on dark sandy loam. Beets made but little growth in July. Mr. Howell sent his beets to the express office, but the agent neglected to send them and let them freeze.

Kingsbury County.—Twenty-one samples of seed were distributed in this county and only two of the experimenters reported. Weather report same as in preceeding county. Mr. Gleason planted on black loam manured in 1889 with stable manure. Mr. Masters reports dry weather in his section and thinks there would have been better results if more rain had fallen.

Jerauld County.—But three samples of seed were asked for from Jerauld and one sample of beets was sent in for analysis. Mrs. Atwood planted on black sandy loam and reports that the beets were still growing when harvested.

Sanborn County.—One sample of beets from two packages of seed is the report of this county. Mr. Trinen planted on black sandy loam. His beets were too far apart.

Miner County.—Seven packages of seed and three samples of beets for this county is this years record. The weather reports differ but little from the average for this section. Hard frosts in October are noticed. Mr. Bohlman planted on old land, black loam, and transplanted to fill out vacancies where seed did not germinate. Mr. Holmes used sandy loam with much sand. Mr. Ogden planted on sandy loam and although water stood on the plat until June a fine stand was secured.

Aurora County.—Five samples of beets were returned from this county. The weather report is about the same as for the other counties. A heavy rain is reported on the 12th of October.

Mr. Swatman planted on black loam. Mr. Townsend planted two varities on black loam. Owing to the wet spring the beets were sown late. A good opportunity is here seen to judge of the comparative merits of the two strains of beets. The two analysis nearly duplicate each other with a slight advantage for the Kleinwanzlebener type. Mr. Oppel planted on sandy loam but his ground got hard and the beets did not thrive. Mr. Burnham used black loam but it was so wet that the planting was late. Cut worms destroyed many of the young plants at first and on the 22 of June hail ruined many more. About half a stand was secured.

Hanson County.—Four packages of seed were sent to this county but none of them have been heard from.

Davidison County.—Of the four applicants who received seed in this county Mr. Angel is the only one who returned beets for analysis. He planted on black sandy loam, but the seed was slow in germinating, taking in some cases till after the third hoeing before they all came through. He firmed the ground on the seed after drilling it in, by laying a board on the row and then stamping on the board.

The following table completes the reports from this section:

Station Number.	Variety.	Grower.	Planted.	Harvested.	Rows—Inches.	Beets in Row—Inches.	Tons Per Acre.	Number Beets Analyzed.	Average Weight—Grams.	Per Cent Sugar in Beets.	Per Cent Sugar in Juice.	Degrees Brix.	Purity Coefficient.	Per Cent Ash in Juice.	Per Cent Marc in Juice.	Pounds Sugar Per Per Acre.
		BROWN COUNTY—														
395	V	N. Fulker	June 5	Oct. 14	18	------	--------	6	325	15.20	16.05	21.40	75.	1.52	5.28	--------
403	V	S. W. Narregang	May 1	Oct. 24	22	3	39.	8	250	18.30	19.28	21.	91.81	.91	5.08	14,274
410	K	O. P. Hansen	May 13	Oct. 21	------	------	--------	4	829	12.50	13.03	12.10	90.	1.17	4.17	--------
412	K	Charles V. Webber	May 9	Sept. 22	22	8	24.25	3	812	11.80	12.35	19.50	74.85	1.50	4.43	5,782
417	V	O. C. Matteson	May 22	Oct. 25	20	6	16.5	5	789	13.	13.54	16.50	82.24	1.19	4.30	4,290
424	V	George Vetter	May 11	Oct. 27	22	5	28.	5	474	13.20	13.87	18.	77.06	1.19	4.85	7,392
433	V	H. J. Miller	May 25	Oct. 25	22	5	25.	5	477	12.50	13.08	16.60	78.79	1.19	4.41	2,250
447	K	H. C. Coburn	May 25	Oct. 25	22	9	16.	5	452	12.50	13.18	17.70	74.46	1.19	5.16	4,000
462	V	C. J. Edson	May 12	Oct. 31	22	5	19.	5	454	14.20	14.83	19.	78.05	1.58	4.24	5,396
480	V	William Crockard	May 6	Nov. 2	27	------	--------	5	478	13.	13.58	16.10	84.35	1.13	4.29	--------
489	K	Robert Moody	April 23	Oct. 26	22	5	20.23	5	552	9.90	10.29	15.50	66.39	2.21	3.75	4,009
522	V	J. W. Svarstad	May 6	Oct. 22	22	6	23.	5	446	16.35	17.20	20.40	84.30	.99	4.90	7,521
		MCPHERSON COUNTY—														
488	K	George B, Reid	May 20	Nov. 1	22	9	11.	5	326	16.70	17.65	19.60	90.05	1.05	5.40	1,837
		EDMUNDS COUNTY—														
396	K	J. W. Brown	May 6	Oct. 20	22	9	46.33	5	589	14.30	14.98	18.40	81.41	1.22	4.55	13,251
400	V	W. H. H. Dickinson	May 28	Oct. 20	22	6	10.	5	514	14.20	14.84	17.80	83.37	.91	4.34	2,840
402	K	John Bergman	May 18	Oct. 22	24	8	20.75	5	680	14.80	15.52	19.20	80.83	1.22	4.55	6,142
474	V	S. L. Bakkegard	May 15	Oct. 24	20	------	15.5	5	486	18.70	19.65	22.10	88.91	1.39	4.83	5,797
477	K	H. Hilton	May 5	Nov. 1	22	5	33.	5	536	15.50	16.28	18.80	86.66	.94	4.79	10,230
		FAULK COUNTY—														
441	V	S. S. Wentworth	May 16	Oct. 27	48	7	31.3	2	683	15.10	15.80	20.40	77.45	1.24	4.40	9,452
442	K	S. S. Wentworth	May 16	Oct. 27	48	7	32.2	2	749	13.15	13.71	18.20	75.33	1.41	4.13	8,468
486	V	A. M. Thompson	May 14	Oct. 24	22	5	26.	6	412	17.10	17.96	20.10	89.35	1.01	4.80	8,892
		SPINK COUNTY—														
393	K	G. W. Else	May 5	Oct. 20	18	6	23.7	5	575	15.50	16.20	16.40	98.78	1.00	4.30	7,365
405	V	W. F. Sander	April 28	Oct. 24	22	5	15.	5	474	15.30	16.05	19.20	83.59	1.16	3.29	4,590
418	K	E. C. Perkins	May 30	Oct. 25	22	11	14.	5	596	12.	12.40	15.70	79.55	1.31	3.94	3,360
446	K	W. L. Thomas	April 28	Oct. 26	22	6	15.	5	327	11.65	12.11	15.80	79.65	1.10	3.79	3,495
454	K	R. Brunn	May 4	Oct. 26	36	8	19.8	2	1,048	11.25	11.69	18.	64.94	.91	3.77	4,455
464	V	R. Bingham	May 20	Oct. 28	45	------	--------	------	710	10.80	11.27	14.50	77.72	1.22	3.80	--------
466	V	F. J. Carrier	May 3	Oct. 25	22	4	20.	5	446	15.80	16.54	20.	82.70	1.23	4.49	6,320
499	K	H. Wilson	June 15	Oct. 20	24	5	10.5	5	316	15.10	10.09	18.80	85.58	1.30	5.15	3,171
500	V	H. Wilson	June 24	Oct. 21	24	------	--------	3	310	17.	17.79	21.20	84.86	.98	5.49	--------

Station Number.	Variety.	Grower.	Planted.	Harvested.	Rows—Inches.	Beets in Row—Inches.	Tons Per Acre.	Number Beets Analyzed.	Average Weight—Grams.	Per Cent Sugar in Beets.	Per Cent Sugar in Juice.	Degrees Brix.	Purity Coefficient.	Per Cent Ash in Juice.	Per Cent Marc in Beets.	Pounds Sugar Per Acre.
		CLARK COUNTY—														
392	V	S. Westover	May 8	Oct. 22	22	12	39.50	3	953	12.30	12 85	16.	80.31	.90	4.36	9,717
425	V	N. T. Waterman	May 26	Oct. 25	30	6	--------	5	538	13.	13.62	17.10	49.65	1.09	4.56	--------
429	V	P. B. Peterson	May 6	Oct. 21	22	4	27.	5	560	14.	14.69	17.70	83.	.86	4.71	7,560
460	V	Mrs. E. C. Schulz	May 11	Oct. 28	22	4	52.50	5	411	10.20	10.72	19.	56.42	.94	4.82	4,590
483	V	E. A. Howey	May 6	Oct. 25	22	10	31.50	4	868	14.80	15.42	18.40	83.80	1.19	4.04	9,324
503	K	R. M. Weston	May 6	Oct. 29	30	6	29.	3	529	11.30	11.80	16.	74.	1.68	4.33	6,554
		HAND COUNTY—														
421	K	Oliver Pash	May 15	Oct. 25	18	5	28.8	4	518	15.90	16.68	20.20	82.57	1.10	4.69	9,158
538	K	James Jones	May 12	Oct. 22	22	6	40.	2	1,040	13.87	14.60	18.80	77.66	--------	--------	11,096
		BEADLE COUNTY—														
423	V	Chas. R. Fuller	May 6	Oct. 26	22	10	16.50	4	454	14.60	15.35	19.80	77.53	1.19	4 90	4,818
493	V	Simon Keator	May 20	Oct. 22	22	5	15.	5	496	8.90	9.21	14.50	63.52	1.93	3.39	2,670
523	K	C. A. Campbell	May 6	Oct. 25	22	4	11.50	5	372	15.10	15.90	22.	72.30	1.40	5.18	3,473
524	V	C. S. Sprague	May 11	Oct. 24	22	11	11.25	5	352	17.25	18.25	12.40	85.30	.82	5.47	3,381
		KINGSBURY COUNTY—														
439	V	W. L. Gleason	May 10	Oct. 24	22	6	22.	3	1,092	11.10	11.57	15.70	73.70	1.27	4.06	4,884
505	K	J. F. B. Masters	June 5	Oct. 28	22	6	14.	5	283	12.80	13.30	15.80	84.	1.13	4.80	3,584
		JERAULD COUNTY—														
451	K	Mrs. S E. Atwood	May 6	Oct. 21	22	5	21.	4	499	11.15	11.60	17.70	65.54	1.55	3.88	4,683
		SANBORN COUNTY—														
506	K	Peter Trinen	May 15	Oct. 22	46	8	27.	3	752	12.40	13.	16.	81.	1.31	4.27	6,696
		MINER COUNTY—														
427	K	M. Bohlman	May 12	Oct. 27	22	6	24.	5	428	14.20	14.85	19.	78.16	1.30	4.40	6,916
444	K	H. T. Holmes	May 1	Oct. 25	22	6	20.	5	497	11.65	12.19	16.	76.19	1.25	4.44	4,660
487	K	A. B. Ogden	May 2	Oct. 31	22	6	34.50	5	586	12.70	13.20	17.50	75.43	1.36	3.94	8,763
		AURORA COUNTY—														
422	V	M. G. Swatman	May 1	Oct. 26	22	6	14.	5	441	15.70	16.49	20.	82.45	.80	4.81	4,396
472	V	D. G. Townsend	June 8	Oct. 24	30	------	20.	4	834	13.60	14.23	18.20	78.19	1.56	4.45	5,440
473	K	D. G. Townsend	June 8	Oct. 24	30	------	21.	4	762	13.60	14.26	18.20	78.35	1.78	4.65	5,712
491	K	J. P. Oppel	May 10	Oct. 25	36	10	12.50	5	464	11.80	12.33	17.80	69.27	1.48	4.27	2,950
507	K	V. E. Burnham	May 23	Nov. 5	22	8	15.	5	557	14.20	14.90	17.20	86.00	1.02	4.53	4,260
		DAVISON COUNTY—														
518	K	F. B. Angell	May 7	Nov. 1	22	6	29.	5	558	14.60	15.30	17.80	86.	1.52	4.31	8,468

THE MISSOURI RIVER REGION.

Campbell County.—Two packages of seed were sent to this county, and two packages of beets were returned. The weather report is as follows: May, rainy; June, rainy and hot; July, first part rainy and cool; second, warmer; August and September and dry and hot; October dry and cool.

Mr. Larson used black sandy loam and secured good results. He asks if there is any way that molasses may be made out of the beets. In a small way some parties in South Dakota have already made molasses from the juice of the sugar beet. The beets are grated and the juice expressed in a manner similar to the process used in making cider from apples. The juice is simply boiled and skimmed. No doubt an improvement might be made by using lime water to clarify the juice. This might also remove some of the taste peculiar to sugar beets. Mr. Gjefle did not complete his report.

Walworth County.—Two packages of seeds and two samples of beets is the report for this county. The weather report is similar to that of the preceding county. Mr. Payne employed a reddish-black bunch grass soil. Land was fertilized two years ago. Mr. Welch planted on sandy loam mixed with clay and used no fertilizer this year.

Potter County.—Fourteen packages of seed were sent to this county and seven samples of beets were returned. The weather report is similar to the preceding. Frosts are reported in October. It might be well to observe here that sugar beets will stand a rather severe frost without suffering any material damage after they are mature and while they are still in the ground.

Mr. Huyck used a deep black loam that has been in garden since 1885. Hen manure has been used sparingly. Some of the beets washed out, but the places were filled in by transplanting. Mr. Walter used a dark sandy loam manured last season with well-rotted stable manure. Hail injured the leaves severely. Mr. Gorman used a gravelly and sandy loam never fertilized. Mr. Scanlon used bunch grass soil and no fertilizer. Mr. Naylor sowed on black prairie loam and used no fertilizer. Had raised beets on same ground for two years. His beets gave the highest per centage of sugar of any samples coming to this larboratory this year. Mr. Cattron used dark loam, no fertilizer and secured a good stand. Mr. Mancher used a variable soil, but it was poorly prepared and plowed very shallow.

Sully County.—Five packages of seed and five samples of beets is the report for this county. None of the observers report frosts in October.

Mr. Schreiber planted on black loam and secured about half a stand, owing to the formation of a crust on the ground soon after the beets were sown. Mr. Schultz planted on black loam and his plants were injured during the dry weather by a long, grayish beetle. Mr. Spitz gives a similar report. Mr. Fagner reports an extra fine stand and finds the beets good both for stock and for table use. Mr. Porter planted on black loam and found the beets easier to cultivate than he expected.

Hyde County.—Three samples of seed were sent to this county and one sack of beets was returned. Mr. Lawson planted on a clay loam, and gives a report of the weather not varying much from the preceding.

Hughes County.—Seventeen samples of seed and five sacks of beets returned. The reports for the weather are as usual, but October is spoken of as a warm month.

Mr. Chandler sowed on light, sandy soil and reported a number of beets in outside rows that weighed over eight pounds. Mr. Fuller planted on black loam near a draw and a heavy rain washed out many of the beets. Mr. Chandler used a deep, sandy loam and thinks the late spring a great disadvantage. Mr. Millett sowed on sandy loam, but his beets were not properly tended. The ground caked and the beets were injured when the weeds were pulled out. Mr. Purinton planted on sandy timber land, but his beets were to far apart. He suggests that the experimental station should furnish the seed to farmers at cost, as they are fine stock. Farmers can buy as cheaply and of the same parties as the experiment station can.

Buffalo County.—Mrs. Johnson sowed on sandy loam. The grouud was sloping, so that most of the seed washed out. The weather report is substantially as the preceding. Three samples of seed were sent to this county.

Brule County.—Four packages of beets were returned for the seven samples of seed distributed to this county. The weather resembled the preceding.

Mr. Wolbert used black loam and secured fine results. Mr. Crisford planted on black loam and simply sent five beets about right size. Mr. Rigney sowed on a dark sandy loam. His beets were injured by grasshoppers. Mr. Vanloan used gravelly clay. During July and August a long, slim bug ate the tops all off the beets.

Charles Mix County.—One sample of beets came from this county, while five samples of beet seed were sent out. Weather report as preceding.

Mr. Miner planted on black clay loam. His beets were large, and he reports the enormous yield of ninety-five tons per acre. This is a most extraordinary yield, and the analysis shows surprising results.

Bon Homme County. Six samples of beets were received from seventeen packages of seed. Frost is reported in October.

Mr. Mullinger used bottom land rich with mould. His beets grew large and were poor in sugar. Mr. Kirk planted on sandy loam fertilized last year with barn yard manure. Mr. Bullis used a light black soil. His beets were too far apart and were poor sugar. Mr. Hood planted on sandy soil and obtained a large yield although the per cent of sugar was rather low. Mr. Heitgen planted on sandy soil and fertilized with barn yard manure. Mr. Schmidt planted on loamy soil but the ground became very hard.

Yankton County.—Mr. Nelson sent in beets raised from the seed sent by Secretary Rusk, Dippes Kleinswanzleben. He used a black loamy soil, and his results are good. He reports the weather about the same as before.

The following table completes the report for this region.

Station Number.	Variety.	Grower.	Planted.	Harvested.	Rows—Inches.	Beets in Row—Inches.	Tons Per Acre.	Number Beets Analyzed.	Average Weight—Grams.	Per Cent Sugar in Beets.	Per Cent Sugar in Juice.	Degrees Brix.	Purity Coefficient.	Per Cent Ash in Juice.	Per Cent Marc in Beets.	Pounds Sugar Per Acre.
		CAMPBELL COUNTY—														
519	V	John Larson	May 5	Nov. 2	22	7	16.	5	448	17.	17.80	20.	88.	1.23	4.69	5,540
530	V	S. O. Gjelle	May 23	Oct. 28	22	8	--------	5	450	14.25	14.98	18.10	83.	.86	4.85	--------
		WALWORTH COUNTY—														
411	K	W. H. Payne	May 3	Oct. 22	22	5	19.75	5	445	16.50	17.22	19.20	89.68	1.28	4.20	6,517
542	----	F. W. F. Welch	May 15	Nov. 4	20	5	30.	5	520	14.73	15.50	18.80	82.40	--------	--------	4,428
		POTTER COUNTY—														
404	K	M. Huyck	May 2	Oct. 24	22	3	24.5	5	560	13.60	14.24	17.40	81.84	1.13	4.50	6,264
414	K	John Walter	May 16	Oct. 22	22	7	13.5	5	544	16.40	17.17	21.20	81.	1.50	4.55	4,428
453	V	R. T. Gorman	May 11	Oct. 28	22	6	17.	5	374	16.19	17.	21.20	80.19	1.33	5.32	5,474
490	V	W. E. Scanlon	May 11	Oct. 22	22	6	70.5	4	950	13.20	13.81	16.80	82.20	1.47	4.41	18,612
515	V	James Naylor, Jr	May 19	Oct. 31	22	6	20.	5	377	20.40	21.60	23.60	91.53	.85	5.63	8,170
529	K	C. F. Cuttron	May 21	Nov. 6	22	6	17.75	5	584	15.60	16.10	18.90	86.50	1.17	4.40	5,407
541	K	Edward Mancher	May 27	Oct. 22	48	------	--------	6	383	14.63	15.40	20.50	71.10	--------	--------	--------
		SULLY COUNTY—														
531	K	Thomas Schriber	May 14	Nov. 7	22	9	15.	5	452	14.60	15.26	17.60	86.70	.72	4.32	4,380
439	K	E. Schulz	May 7	Oct. 24	22	8	10.	4	561	12.50	13.11	17.30	85.78	1.13	4.05	2,500
482	K	E. Spits	April 4	Oct. 31	22	7	16.	5	377	15.20	15 49	20.80	76.63	1.91	4.64	3,040
500	K	F. E. Fragner	May 11	Oct. 22	22	6	15.	5	634	18.10	19.	21.30	80.20	1.05	4.53	5,430
521	V	C. B. Porter	May 14	Oct. 24	22	7	19.75	5	556	14.96	15.70	17.80	88.	1.16	5.	5,885
		HYDE COUNTY—														
501	V	W. O. Lawson	May 11	Oct. 30	22	6	4.	6	214	15.40	16.20	20.90	77.94	1.19	5.45	1,232
		HUGHES COUNTY—														
419	K	A. M. Chandler	April 30	Oct. 24	22	6	33.	5	423	16.10	16.80	18.60	90.32	1.17	4.19	10,622
428	V	E. B. Fuller	May 16	Oct. 25	22	4	33.75	4	605	16.10	16.92	19.20	88.13	.84	4.85	10,867
438	V	L. A. Chandler	May 7	Oct. 24	22	4	30.	5	425	13.90	14.69	18.	81.61	.95	5.40	5,560
450	K	G. J. Millett	May 16	Oct. 27	22	13	35.5	4	623	10.20	10.64	16.60	64.10	1.84	4.22	7,242
458	K	R. E. Purinton	April 30	Oct. 27	44	12	18.	3	1,084	11.15	11.64	16.40	70.98	1.65	4.23	2,007
		BUFFALO COUNTY—														
536	K	Mrs. M. C. Johnstone	May 20	Oct. 20	22	6	7.5	5	400	13.68	14.40	20.20	71.30	--------	--------	2,052
537	V	Mrs. M. C. Johnstone	May 26	Oct. 29	22	6	7.5	5	340	16.91	17.80	23.	73.	--------	--------	2,198
		BRULE COUNTY—														
426	V	Adam Wolbert	May 23	Oct. 20	23	8	24.	5	516	17.50	18.43	20.70	89.03	1.13	5.05	8,400
468	K	John Cresford	May 5	Oct. 24	22	5	16.	5	438	14.30	15.07	18.90	79.73	1.13	5.12	4,576
471	K	P. Rigney	May 7	Oct. 20	------	------	--------	3	800	14.60	15.27	19.20	79.53	1.64	4.40	--------
476	V	J. A. Van Loan	May 2	Oct. 28	22	5	32.5	5	422	14.60	15.35	19.20	79.95	1.59	4.92	9,490

Station Number.	Variety.	Grower.	Planted.	Harvested.	Rows—Inches.	Beets in Row—Inches.	Tons Per Acre.	Number Beets Analyzed.	Average Weight—Grams.	Per Cent Sugar in Beets.	Per Cent Sugar in Juice.	Degrees Brix.	Purity Coefficient.	Per Cent Ash in Juice.	Per Cent Marc in Beets.	Pounds Sugar Per Acre.
		CHARLES MIX COUNTY—														
432	V	H. W. Miner	May 25	Oct. 24	22	6	95.	3	923	13.40	54.	16.90	82.83	1 35	4.28	25,460
		BON HOMME COUNTY—														
457	V	R. Mullinger	----------	Oct. 24	22	6	40.	8	995	9.55	10.01	15.	66.73	1.69	4.69	3,820
467	K	James Kirk	April 30	Oct. 28	22	9	34.	5	594	17.30	18.12	21.	86.29	1.09	4.51	11,764
495	K	N. A. Bullis	April 23	Oct. 31	44	5	--------	5	468	10.70	11.20	14.80	75.67	.98	4.48	--------
497	V	John Hook	April 30	Oct. 17	22	4	56.	4	525	11.70	12.27	15.80	77.65	1.13	4.93	11,700
498	K	M. Heitgen	May 28	Oct. 21	22	8	19.	3	840	10.10	10.51	15.60	67.37	1.26	3.89	3,838
514	V	J. B. Schmidt	April 30	Nov. 3	22	8	16.	5	510	16.40	17.20	19.40	88.60	.93	4.63	5,248
		YANKTON COUNTY—														
435	V	T. Nelson	May 28	Oct. 26	24	8	18.	4	500	15.40	16.16	20.	80.80	1.23	4.73	5,544
436	K	T. Nelson	May 28	Oct. 26	24	6	24.	4	565	14.20	14.79	20.30	72.85	1.61	3.97	6,819

THE BLACK HILLS REGION.

Forty-six applications for seed were received from this region, and fifteen samples of beets have been returned. The analyses of the samples sent make a very creditable showing. Not one has fallen below the standard required for sugar making and a good percentage shows a high standard. The weather report is: May wet and cold; June wet and cool; July and August hot and dry; September wet and moderately warm; October, first part dry and warm, last part wet and cold.

Custer County.—Mr. Sanborn planted on sandy land and used no fertilizer. Mr. Stoltz planted on gumbo and let the beets take care of themselves. Mr. McVey sent no report with his beets. Mr. Boland planted on a red gypsum soil and some of the seed failed to germinate. He filled in the breaks with sweet corn and cultivated the beets with the corn.

Butte County.—Mr. Vallery planted on gumbo alkali soil which became so hard it deformed the beets.

Fall River County.—Mr. Wight planted on sandy loam with no fertilizer and simply hoed twice. Mr. McDowell planted on made land composed of sand and clay. Mr. Ball planted on low sandy soil and kept clean from weeds.

Lawrence County.—Mr. Breslin planted on strong clayey soil mixed with sand. His crop was injured some by a heavy rain and hail storm in June. Mr. McLaughlin used gypsum soil.

Meade County.—Mr. Heinrichs used a high sandy soil mixed with lime stone and he used no manure.

Pennington County.—Mr. Nelson planted on light black loam but the deep plowing threw up to much raw subsoil. The plowing should have been done in the fall. He has saved beets to plant for seed. Mr. Stucker used sandy loam. Mr. Thompson planted on sandy loam situated in the foot-hills, on Mr. Little's ranch. Had a good stand. Mr. Jornston planted on black loam with very little sand.

The following table completes the report for this region:

Station Number.	Variety.	Grower.	Planted.	Harvested.	Rows—Inches.	Beets in Row—Inches.	Tons Per Acre.	Number Beets Analyzed.	Average Weight—Grams.	Per Cent Sugar in Beets.	Per Cent Sugar in Juice.	Degrees Brix.	Purity Coefficient.	Per Cent Ash in Juice.	Per Cent Marc in Beets.	Pounds Sugar Per Acre.
		Custer County—														
407	V	G. C. Boland	May 12	Oct. 20	22	------	--------	4	650	14.80	15.50	17.50	88.57	.96	4.49	--------
409	K	G. O. Sanderson	May 5	Oct. 21	22	5	28.50	5	516	13.30	13.91	16.20	85.86	.98	4.44	7,581
508	V	F. Stoltz	June 1	Nov. 3	36	12	--------	4	668	12.85	13.40	16.	84.	1.16	4.50	--------
534	V	E. D. McVey	--------	--------	------	------	--------	4	792	13.77	14.50	19.	36.32	--------	--------	--------
		Butte County—														
416	K	P. P. Vallery	May 21	Oct. 22	16	8	42.7	4	769	12.10	12.64	16.80	75.24	1.37	4.28	10,334
		Fall River County—														
469	K	Stephen Wight	April 31	Oct. 28	22	10	16.	5	511	15.30	16.14	18.40	87.72	1.04	5.23	4,896
481	K	F. C. McDowell	April 28	Nov. 1	------	------	18.2	5	376	16.50	17.22	21.90	78.63	1.49	4.22	6,013
532	K	J. A. Ball	April 30	Nov. 2	22	4	22.	5	498	13.20	13.90	17.30	80.40	1.31	4.79	2,904
		Lawrence County—														
475	----	Jno. Breslin	May 6	Oct. 28	24	------	18.	5	722	15.20	16.03	19.20	83.49	1.40	5.19	5,572
510	K	Jno. McLaughlin	May 10	Oct. 29	36	6	9.33	5	415	15.50	16.30	20.	81.50	1.29	4.95	2,892
		Meade County—														
511	V	R. Heinrichs	May 16	Nov. 2	22	6	12.	5	402	17.10	18.04	20.60	87.60	1.43	5.23	4,104
		Pennington County—														
502	V	J. A. Nelson	May 7	Oct. 29	22	10	10.	5	425	17.	17.99	21.60	83.30	.99	5.48	3,400
513	V	F. Stucker	May 18	Oct. 28	22	4	35.	3	847	15.70	16.50	18.80	87.80	1.05	5.11	11,990
516	K	T. Thompson	May 13	Oct. 21	22	8	--------	5	486	14.30	14.99	18.	83.30	.86	4.61	--------
525	V	W. H. Johnson	May 30	Oct. 31	22	8	10.50	5	298	14.10	14.99	20.	74.95	1.04	5.91	2,961

SUMMARY OF RESULTS FROM THE WHOLE STATE.

160 analysis all told were made this season. One sample came from outside of the State and the report is not included. One sample was spoiled when it reached the Station Laboratory and the analysis is thrown out as worthless.

Arranged according to percentages the work makes the following exhibit.

Under 12 per cent sugar in the beet, 27 samples.
Between 12 and 13 per cent sugar in the beet, 13 samples.
" 13 " 14 " " " " 26 "
" 14 " 15 " " " " 34 "
" 15 " 16 " " " " 28 "
" 16 " 17 " " " " 13 "
" 17 " 18 " " " " 10 "
" 18 " 19 " " " " 6 "
Over 20 per cent sugar in the beets, 1 "

Considering the number of experimenters, and considering the confessedly bad care some of these experimenters gave the trial plats, and considering the bad season it is evident that nearly every portion of the State is capable of raising beets well adapted to sugar manufacture. An inspection of the yield in tons of beets per acre will show a profitable yield. It is true that the experiments were made with excellent seed, but such seed is easily obtainable by importation or it can be grown at home.

In consideration of the trial now extending over four years and of the results obtained it is safe to say that further experimentation in this line is unnecessary. The fact may be accepted that most portions of the State can raise sugar beets of a high grade for sugar manufacture.

PRICE OF LEADING FOOD ARTICLES.

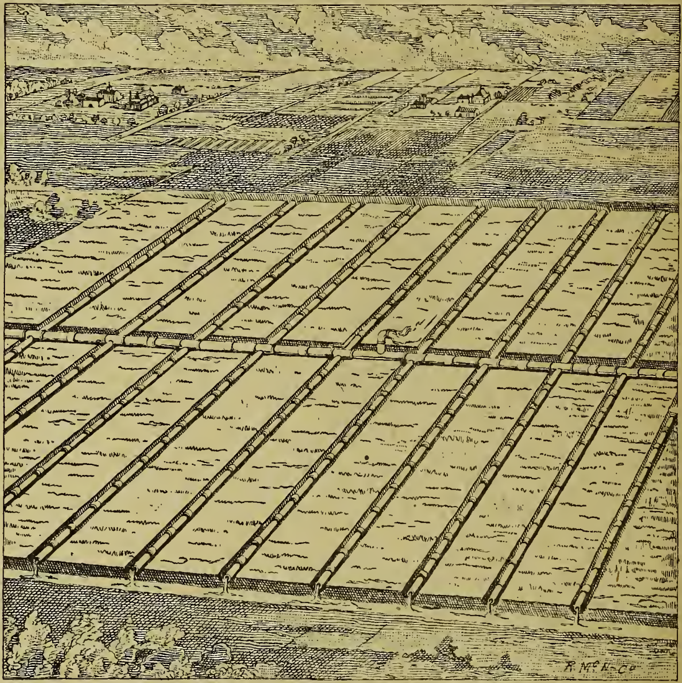
The following table gives the wholesale price of leading food articles for 1894, as compiled by the American Grocer from its market reports for twenty-five years. For purposes of comparison the prices of the same articles for 1869 are given:

ARTICLES.	1894.	1869.
Flour, per bbl	$ 3 30	$ 6 62
Sugar, per lb	04⅜	13⅞
Coffee, per lb	18⅞	15⅞
Tea, per lb	20¾	59
Rice, per lb	04½	06¾
Beef, mess, per bbl	8 19	11 41
Pork, mess, per bbl	13 80	31 04
Lard, per lb	07⅝	18½
Butter, per lb	25½	25½
Cheese, per lb	10⅝	14
Tomatoes, canned, No. 3, per doz	95	2 10
Corn, canned, No. 2, per doz	86	2 75
Peaches, canned, No. 3, per doz	1 30	3 50
Salmon, canned, No. 1, per doz	1 55	3 75

From the table it will be seen that the only article of production of this state that has maintained its former price is butter; and that both beef and cheese, in which the state is largely interested, suffered a much less decline in prices than many other articles. Flour and pork have both declined over 50 per cent.

IRRIGATION.

The accompanying cut shows a tract of land with drain tile laid to subirrigate from an artesian well. The tiles are shown uncovered and connected with the well with the vents open and the water flowing out of them at the waste ditch. This cut is only intended to give a general idea of the practice and not to scientifically illustrate it.



The act of the Legislature creating the Bureau of Labor statistics, among other things, makes it the duty of the Commissioner to collect details relating to the productive industries of the State. Under this head comes a question that, it seems to me, overshadows every other question in this State, and that is—how shall the great industry of farming be rescued from its present depressed condition on account of constantly recurring loss of crops by drouth? On the successful solution of this problem lies all our hopes of prosperity and happiness as a people, and it invites the most serious thought of the statesman and the patriot as well as of all classes of citizens.

We have a soil magnificent in every requisite, inexhaustable, fruitful, easily cultivated, and with sufficient water, yielding as bountifully as the historic acres of the Euphratesor the Nile; and yet, from an insufficient rainfall, loss of crops are constantly recurring until the condition of our farmers tends towards the boundaries of despair. A glance at the reports of farmers, shows that this magnificent soil of ours, which everyone knows is capable of yielding an average of thirty bushels of wheat to the acre, without over taxing it, is now, under present conditions, putting forth the pitiful average of about ten bushels to the acre of this cereal and of other crops in proportion. The same amount of seed, the same labor in preparing the ground, in planting, in harvesting and in threshing, must be put forth to raise the lesser as the greater crop; and the difference between the yield as it is and the yield as it might be makes the difference between adversity and prosperity. Realizing the importance of this matter I have anxiously sought for light upon it and the result of my investigations leads me to the conclusion that there is but one sufficient, complete and effectual remedy and that is irrigation.

But the question is: How shall we irrigate?

To answer this, is the purpose of this article.

Underlying the greater area of the State, we have the largest "artesian" basin of the world, whose superincumbent crust of earth has only to be pierced by the drill and streams of water gush forth abundant for every need. Heretofore the problem has been how to utilize this water. So far as I am informed the world is without experience in irrigating level or undulating surfaces, like our great prairies; irrigation having heretofore been practiced in valley lands, on running streams, whose natural fall gave opportunity for creating reservoirs by means of dams cheaply constructed, to supply the water by natural flow. With different conditions, the expense of creating reservoirs upon our prairies has rendered them impracticable. Then, the land being level or undulating, it has been impossible to supply the water to the land by the natural flow caused by gravity, in the customary way.

To solve the problem of irrigating by means of artesian wells, it has been necessary to find answers to these two questions:

How can the land be irrigated from the wells without reservoirs? And what means shall be used in place of the natural flow?

It is a well known fact that millions of acres of land in the State of Illinois, and other states, have been reclaimed to agriculture by means of underdraining with tile; and the idea of irrigating by the same means has already been put into highly successful practice by American enterprise. Already in New Mexico and other states this system of irrigation is being used, and, from a careful investigation, I believe it will be the means of saving the agricultural pursuit of this state.

To sub-irrigate with drain tile by our artesian wells requires no reservoirs, and the pressure of the well will send the water through the tile, over the undulating surface, to every spot of land, supplying it with water as throughly as valley lands are irrigated by natural flow.

The process is sub-drainage reversed. In the one case the tile is used to take the surplus water away from the land, in the other it used to supply deficient water from the well to the land. In the one case the tile, laid in the land, draws the water off and discharges it into conduits, through open vents beyond the land, in the other the vents are closed at the boundaries of the land, the lines of tiling are filled from the well; and, whereas, the water, in the first instance, perculates from the land into the tile and runs off, in the second instance it perculates from the filled tiles, through them, into the land, supplying it with deficient moisture instead of drawing off its surplus. The practice of sub-irrigation is comparatively new, and is, as I have said, but a reversal of the practice of sub-drainage. The result is that we must look into the fields of inquiry of the latter practice to find practical information concerning the former.

I have before me "Practical Town Drainage," by C. G. Elliot, State Engineer of Drainage of the State of Illinois, and copies of the "Drainage Journal", both works published by J. J. W. Billingsly, Indianapolis, Ind., to whose courtesy I am indebted for these valuable works. The work of Mr. Elliot is a most comprehensive and exhaustive monograph upon this topic, illustrated with cuts to explain all the details of sub-drainage, its action, operation, results, cost and etc., and to show how this practice may be applied to irrigation, by means of our artesian wells, is now my purpose. To illustrate: Suppose that we wish to prepare a section of land for sub-irrigation.

The first thing is to get a well, and it should, of course, be on the highest point of land in the tract. Having procured a supply of water, the next step is to dig the trenches and lay the tile. Here there is preparatory work, for the location of the mains must first be properly made. Mr. Elliot says that "the general rule for the location of the mains for drainage is to let them follow the lowest land or course of natural drainage." In irrigation this rule will be reversed and the mains will follow the highest lands. "In all cases we should take every advantage that nature has given us in this work." Having located the course of the trenches, the next question is how deep should they be dug ? Mr. Elliot says they (the tile) should be laid below frost, which in this state is at least three and a half feet, but Mr. Billingsly advises me that for sub-irrigation they need be laid no more than 12 inches deep. I suppose because the water may be drawn off in cold weather.

The next question is, how far apart should the tile be laid ? On this subject Mr. Elliot, on page 52 of his work, says: "In our experience drains placed 100 feet apart, in our loamy soil (Illinois) and 3½ feet deep will thoroughly drain the land where the surface is ordinarily flat." On page 24, in discussing "back-water," from obstructed conduits, he says: "We must remember that if water will enter at the joints of the drain, it will flow out (through the joints) into the soil just as readily, if the stream in the tile is retarded, or entirely stopped." Now as sub-irrigation is the reversal of sub-drainage, the tile in the latter case are "entirely stopped." It follows, then, that the flow of water *from within* the tile, which are entirely stopped up and kept full by the pressure of the well, will be as great as the flow *from without* when the tile are unstopped and the water flowing freely; and that if the water, flowing outward through the joints of the tile, is absorbed as rapidly by the soil, in the one case, as it is drained off in the other, that tile may be laid for sub-irrigation the same as for sub-drainage. As to the soil of Illinois and that of this State, I believe the fact of the greater friability of our own, and the consequent greater capacity for rapidly absorbing or draining off of water, is well known, and that if 100 feet apart and 3½ feet deep for drain tile is sufficient to drain the land there it will be amply sufficient to sub-irrigate it here. but, nevertheless, this is a question that nothing but experience will fully demonstrate. If the tile is laid 100 feet apart and found too far it is an easy matter to lay other lines of tile between them and make them 50 or 33⅓ feet apart or less.

The next question is the size of tile to be used. In Illinois and other States where this question must be determined it depends for its answer on the further question of how much water must be carried off from the land in a given time ? Here the question is the reverse, and is how much water must be put on the land in a given time ?

This brings us to another phase of the inquiry, and that is how much water does our land require, during the crop season, to make it yield its fullest capacity? This is another question that can only be accurately answered by experience. With sub-irrigation, the farmer will have the water supply of his land so thoroughly under his control that it will be like the steam supply to the engine. With his hand upon the lever the engineer opens the connecting valve between boiler and piston-head, regulating the supply of steam and graduating the degree of power to the fraction of a pound, now increasing, now decreasing, as the demand of each moment requires—a master of the force beneath his hand that yields to his slightest impulse. So will it be with the farmer in sub-irrigation from artesian wells. He can put the water on, he can regulate its flow, he can shut it off, or he can open the vents of his drain tile, and the very means that, a moment ago, were used to water the land, may now be used to take the water off. Furthermore, the whole supply of water for the crop will not need to be furnished artificially, but only that portion in which nature is deficient. In discussing this question Mr. W. P. Butler in table number 43, on page 91 of his "Irrigation Manual" (W. P. Butler, Aberdeen), gives in inches the mean rainfall of the state, as recorded by the United States Weather Bureau, for the years from 1882 to 1892, as follows: March, .72; April, 2.57; May, 3.14; Juue, 4.08; July, 3.63; August, 2.96. These months cover the farming operations of the year. The total for the year being 21.58 inches. He says further, at page 44, that the Hon. J. S. Green, State engineer of Colorado, in his roport for 1888, states "that the limit for remunerative farming without irrigation, is drawn at an annual precipitation of twenty-two inches." In other words, that if the rainfall is less than twenty-two inches in a year, farming is not remunerative. He further strtes, on the same page, that, "one second foot running throughout the irrigation season in addition to about five inches of rainfall during April and May, and four and one-half inches during June, July and August, if distributed with fair care, to diversified crops, on what might be called average land, would irrigate from 60 to 70 acres." Now the "second foot" is described as "a volume of one cubic foot per second flowing constantly during the irrigation season;" but as neither the velocity nor the pressure are given, the measurement of the "second foot" for our purpose is not very satisfactory. All of our artesian wells have a given pressure and a given flow, easily measured, and we can, therefore, accurately determine just what quantity of water they will put on to a given area of land in a given time.

For example: let us take a well flowing 500 gallons a minute. Each gallon of water contains 268.8 cubic inches. To cover an acre of ground one inch deep requires 6,272,640 cubic inches, or about 23,404 gallons of water. (Mr. Butler's table number 21, p. 61, makes it 27,153, but I cannot make it so much.) At 500 gallons a minute the well will flow 720,000 gallons per day of 24 hours; and, as a result, put water on over 30 acres of land, one inch deep, every 24 hours, or on 30 times this amount of land every 30 days or over 900 acres. Or, if we take the Plankinton well, with a flow of 1000 gallons a minute, it will put an inch of water on over 1,800 acres of land every 30 days; or the Baker well, at Doland, with its 2000 gallons flow per minute, it will put an inch of water on over 3,600 acres, every thirty days; or the well at Woonsocket with its 5000 gallon flow per minute; it will put an inch of water on 9000 acres of land every 30 days; or if we take the other great well at Woonsocket, with its 7000 gallon flow a minute, it will put an inch of water on 12,600 acres of land every thirty days; or if we take some of the wells flowing a still greater number of gallons per minute, the figures of which I have not at hand, they may, perhaps, put an inch of water on the whole State every 30 days. I give this example of one inch of water every thirty days, because I believe that amount of water together with the customary rainfall, will be sufficient to insure the full capabilities of the soil, wherever it is used, as I shall undertake to show. This brings us back to the question of what size tile shall we have to use, laid one hundred feet apart to put one inch of water on the land every thirty days, and there are two other questions involved in the inquiry; and they are: the pressure of the well, and rate of absorption of water by the soil. The former of these two questions is easly answered, but the latter is more difficult, as we are without data, excepting that furnished by the reverse of the process, in subdrainage, namely; the rate of giving up by the soil of its surplus water, and, again we shall have to refer to Mr. Elliot for what light he can afford us. At page 55 of his work he gives the results of some experiments in this direction and a table of the rainfall at Tonica, La Salle county, Illinois, showing the quantity of water that fell during a given time, from which he estimated the quantity that it was necessary for the tile to remove, and from there experiments gives the capacity of the tile necessary to do this, under different degrees of fall in the tile within the time required. The deductions from the results of these experiments and the conclusions drawn therefrom would indicate that a very small tile, under the pressure from our artesian wells would be sufficient to supply an inch of water every thirdy days, in fact, much smaller than I would feel safe in recommending. The smallest dimensions given by Mr. Elliot is a two inch tile for branches, and for mains three inches. It seems to me that a 2½ inch tile for sub-irrigations, with the pressure from the well, must answer every purpose here. On these points Mr. Billingsly writes me that in Indiana, where sub-irrigation is used only in gardening, that they lay it one rod apart and use 3-inch to 5-inch tile, but says that these questions depend entirely on the character of the soil. I have been unable to get information from the fields where the larger use of tile, in general diversified farming, is being made for sub-irrigation, but from the wellknown characteristics of our soil, heretofore referred to, I am of the opinion that the distance given by Mr. Elliot will be found sufficient. It must be remembered that he is speaking of the mains, when he says they are laid 100 feet apart. From these mains branch tiles are laid when required. Doubtless it will be found necessary to lay branch tiles also in subirriga- When the mains for the latter process run along the higher crests of land, the water should seep down to the lower places by gravity, but there will be other elevations that it will be necessary to reach by branch lines of tile.

The next question is, will one inch of water every thirty days supply sufficient moisture to insure a crop? If this were one inch of rainfall. or even one inch of surface irrigation, unquestionably it would not; but, remember we put the water *into* the ground, not *onto* it. Every drop, every atom, is utilized. The claim is made in New Mexico and other places where sub-irrigation is practiced, that one inch, put *into* the ground by sub-irrigation is equal to three inches put *onto* it by surface irrigation, and that the saving in water alone, in those countries where water must be paid for, will in a short time pay for the extra expense of laying the tile. It is stated, also, that the yield, owing to the complete control of the water and the entire absence of baking of the soil which occurs in open or surface irrigation, is ond-third greater in sub-irrigation. It is probably entirely safe to assume that in this State, under the scorching sun of our rarified atmosphere and the voracious capacity of our sweeping prairie winds for drinking up moisture, that out of a rainfall of three inches, not more than one inch goes into the ground to supply the needs of irrigation. Yet how our farms would gladden with golden grain, how our harvests would swell with abundance, and how our State would wax rich and prosperous with an assured rainfall of three inches per month from the first day of March until the first day of September! By the tables already given it is shown that the average rainfall per month for the ten years mentioned was but 2.65 inches during these months; and yet, with this average, if it came regularly and uniformly, farming would be highly successful in this State. Now, put an inch of water into the ground every thirty days, where every atom counts, in addition to the usual rainfall on the surface, and it is believed there would be an abundance, and to spare, to insure a yield from the soil to its fullest capacity.

In the language of Mr. Butler "there is no doubt about irrigation paying. It is as old as the race and has been both the heritage and the legacy of every tribe and nation. The dawn of history dimly reveals the practice by those ancient peoples, and history, both sacred and profane, has recorded its onward march as it has the march of armies. In Palestine, in Egypt, in Assyria, and in India. As irrigation developed, empires rose, and with its fall they fell." But we do not need to go to history to find evidence of the greatest benefits to humanity for its practice. They are all around us, not only in neighboring, but in our own state. In Pennington County, in Lawrence County and in Butte County, besides other counties of the state. In Butte County they have an irrigation ditch 39 miles long. The average yield of wheat before was 8 bushels to the acre. Since irrigation, which is surface, the average yield is 25 bushels with other grains in proportion. Some of the lands "under the ditch" cannot be bought for less than $30 per acre. Those not "under the ditch" cannot be sold for $5 an acre. This is the difference between irrigation and non-irrigation in our own state.

The subject is one that is receiving attention throughout the nation. In Colorado, in California, in Wyoming millions of capital is being invested in irrigation works and the results, besides being absolutely certain, are, on the whole, more profitable than mines or manufactures. Nor is the practice being confined to the arid or semi-arid section of the country. Illinois and Indiana, Michigan and Ohio and many other states are turning their attention to the subject.

Pursuing our inquiry we find that the next question is as to the kind of tile. Mr. Elliot says: "The tile selected should be well burned, being hard enough to ring when struck with a knife blade. It is not well to get those which have been drawn out of shape by excessive heat in burning. The best shaped tile is that in which the cross section is a circle. They can be laid more easily and give greater capacity for the material used. The requisites, then, are circular tile, of good clay, well burned, smooth and true in shape."

Laying the tile.

How should this be done? The first thing is to dig the ditch, in any manner you see fit. There are machines to do it, or it may be done by hand or by plowing and by hand. The only important point is that the bottom of the ditch, where the tile is laid must be specially prepared to receive it. This is done with an instrument called a "pull scoop" or tile hoe, and cuts out a circular trench in the bottom of the ditch, into which fits snugly and firmly the tile as it is placed—to be supported on the bottom and at each side by the solid earth, so that it will not get out of line while being covered. Having dug the ditch, the next thing is to prepare the bottom and lay the tile, and these two operations are usually conducted together, as, if the bottom were prepared much in advance of tile laying, it would become filled with falling clods in many places and have to be done over again. "Lay the tile by hand, turning them about until the ends fit closely on the top. The workmen may stand upon the part already laid, for the tile should fit true and solid in the groove made for them. Be sure that they are turned until they fit well. This is an important part of the work and must not be slighted." But it is not intended in this article to give full details regarding the matter, for that the inquirer will be referred to the works specially prepared on the subject, and an outline is only attempted here.

COST.

The next and all-important question is is the cost. To answer this, several things must be considered, the first of which is the cost of the well.

Let us assume that we have a well costing $4,000.00 and that it flows 1000 gallons a minute. We have seen that this will put one inch of water on 1,800 acres of land every thirty days. The cost of the well, per acre, then, would be $2.22.

Mr. Eliot gives the cost of 3-inch tile, in Illinois at $13.20 per 1000 and Mr. Billingsly gives it at $12 in Indianapolis, and says that it can be had, in quantities, at 10 per cent or more less. If sub-irrigation is generally adopted in this State it is probable that it can be furnished here as cheaply as in Indiana, but at present it would be considerably higher. For 4-inch tile Mr. Elliot gives the cost at $20 per $1000 feet, and Mr. Billingsly at $18. It is probable that 2½-inch could be furnished at $10 per thousand feet. Let us assume that to be the cost and that we lay it 100 feet apart. We should have 417 feet to the acre, which at $10 per thousand, would be $4.17 per acre. Adding the cost of the well we have, for well and tile, $6.39 per acre. This is the *cash* outlay that must be made. The remainder of the cost would be in labor, to be done by the farmer, himself, or hired as he saw fit.

To give an idea of the cost of sub-irrigation the following table of the cost of sub-drainage is given from Mr. Elliot's work, page 79. This, however is for 5-inch main, not 2½-inch tile, such as we are considering.

Cost of 5-inch main, per 100 feet.

Depth of Ditch.	Cost of Digging and Laying.	Cost of Tile.	Cost of Filling.	Total Cost per 100 feet.
3 feet	$1.50	$3.00	30 cents	$4.80
4 feet	2.00	3.00	42 cents	5.42
5 feet	3.00	3.00	60 cents	6.60
6 feet	4.50	3.00	75 cents	8.25

A table constructed from the above figures for 2½-inch tile at depth of 3½ feet would be as follows:

Cost of 2½-inch tile per 100 feet.

Depth of Ditch.	Cost of Digging and Laying.	Cost of Tile.	Cost of Filling.	Total Cost per 100 feet.
3½ feet	$1.75	$1.00	33 cents.	$3.08

If the tile are laid but 12 inches, as Mr. Billingsly recommends, for sub-irrigation, the cost of digging and laying and filling would be very much reduced, but with the figures of the table and 470 feet of tile to the acre should have the cost as $12.84 per acre, labor included.

Mr. Elliot gives the cost of branch drains, which are laid with 2-inch tile, for digging the ditch, laying the tile and filling the ditch, as $2 per 100 feet; but he does not give the cost of the tile. If we assume that the tile would cost no more than 75 cents per 100 feet, we should have for 2-inch tile, then, a cost of $2.75 per 100 feet or $8.65 as the total cost, including labor, for preparing an acre of land for sub-irrigation. Add $2.22 for the cost of the well and we have $10.87 as the total cost per acre.

As I have before stated, the difference between irrigated and non-irrigated lands by surface irrigation is more than 3 to 1 in our state. It is claimed and not disputed that the difference between surface and sub-irrigation is one-third in favor of the latter. The lands "under the ditch" in Butte County without irrigation give an average yield of 8 bushels of wheat to the acre and with it of 25 bushels. With sub-irrigation, if the claims made for it are true, the yield would be from 5 to 8 bushels greater. Let us put it at the lowest figure and call it 30 bushels to the acre. The difference between 8 and 30 is 22, let us say 20 bushels. With the very same seed, labor and expense that it costs to raise 6 or 10 bushels to the acre, without irrigation, you may raise 30 bushels with sub-irrigation. So you have a clear profit of 20 bushels to the acre by the latter process. With wheat at only 50 cents a bushel this would be a clear gain of $10 per acre. The article of wheat is taken only as an illustration. The profits in other articles are still greater. Potatoes that go 50 bushels to the acre without irrigation may be made to go 500 bushels with. Hay that goes 1 ton without may be made to go from 3 to 4 with. Timothy and clover that cannot be raised at all without, will yield most bountifully with.

But I need not enlarge. The difference in this state is the difference between adversity and prosperity, between poverty and wealth, between developmdnt and stagnation. Our population is about 400,000 and without irrigation is likely to so remain. With a thorough system of irrigation the state can support and ought, in time, to have 4,000,000.

As before stated, my purpose in this article has not been to treat the subject of irrigation, or sub-irrigation, scientifically. Neither the opportunity nor the means furnished by the appropriation for this bureau have been sufficient for me to have gathered the information nor made the investigations necessary to do this. Beside, the subject is more properly treated in that respect by the department of the state engineer of irrigation.

My purpose has been to call public attention to this matter in answer to the "Macedonian cry" that comes up from the state in the replies of farmers as to what will be necessary to better their condition, the tenor of which, as bearing on this subject, may be seen by consulting those replies given in this report.

If I shall have succeeded in having the question of sub-irrigation by means of artesian wells and drain tiles, fully investigated, I shall have accomplished my purpose. As previously stated, in Wyoming, in Colorado, in California and in other states, under favorable laws, millions of outside capital have been attracted and invested in irrigating enterprises. Colorado, the richest mining state in the world, without irrigation, had scarcely a producing acre. With irrigation the product of its acres is more valuable than that of its mines. Outside capital should be invited here—to put down wells and lay tile. They benefit everyone. If it should cost $20 per acre to put down wells and lay tiles, the investment will be well made. At 10 per cent the interest on this sum would be but $2 per year; another 10 per cent could be added to create a sinking fund to pay the principal, the difference in yield would pay them both, without one extra stroke of labor, and let the farmer live and prosper, too. But so much as this would not be needed. Gone, then, would be the day of drouth, of hot wind, of anxious thought and scanning of the sky for rain, of blasted hopes, and unrequited toil and empty hands at harvest time.

I indulge the hope that the questions herein discussed may be made the subject of consideration by the legislature, feeling that their importance is second to none with which it may have to deal, and that such consideration may result in a satisfactory and successful solution of them, and lead to a realization of all the possibilities that nature seems to have provided in the soil and climate of this state. If I am correct in my conclusion it means a revolution in the material conditions of the state and prosperity on every hand. No one need be told that with the possibilities of the soil fully developed, villages and cities must grow, and that in an area as large as South Dakota and containing its natural resources, independent commercial centers must develop to rival those of neighboring states, and with them better local markets and higher prices for all there is to see and lower for all there is to buy, new manufactories, increased railway tonnage, better rates, wealth, population, power and prosperous times.

THE RUSSIAN THISTLE.

The ravages of this pest have now become so notorious in this and adjoining states, that no report on the conditions of the people, that I am required by statute to investigate, would be complete without some reference to it.

It is stated that this plant had its origin in this country in Bon Homme County, this State, and was introduced in seed grain brought by immigrants from Russia. Whether or not this a true statement of its origin I am not informed, but the fact that it is with us, which is of more consequence, and that it demands attention is admitted. In the neighboring State of North Dakota systematic investigation has been made concerning this plant and the best means of dealing with it by a committee appointed by the Governor of that State, and the following suggestions, taken from the report of that committee, are given:

SUMMARY OF SUGGESTED REMEDIES.

1. Be careful that you do not sow Russian thistle seed with your crops, and especially look out for flax and millet seed that has been grown in proximity to thistles, as it is liable to contain thistle seeds.
2. Let the people of every locality heartily co-operate to prevent any thistles going to seed. either in their cultivated fields or in waste lands or on the roadsides.
3. Cultivate all lands infested with the weed until the first of August, after which time it will not have time to grow and ripen its seeds.
4. If by any means weeds are allowed to go to seed, pull or cut them carefully, without shattering out the seeds, and then burn them; and then look out for that locality the next year, and promptly pull or cut all weeds that appear.
5. Lands infested with thistles may be pastured with sheep, and the growth thus kept down, but do not depend on the sheep alone, as they will not eat all the weeds, and some will go to seed; but by so pasturing the labor of destroying the weeds may be much reduced.
6. Co-operate fully and cheerfully with the officers of the law in all efforts to suppress this weed.
7. Plowing under the weeds before they become stiff and woody, cutting them with a mowing machine, pulling them in scattered places, carefully burning all that may be found with seed formed and all other methods of destruction must be called into use.
8. Familiarize all people with the plant, place a sample in every school house, in the business places of the village, labeled, with directions for every plant seen by everybody to be destroyed.
9. A fence will stop the rolling of most of the weeds upon land from the outside. A strip of sunflowers will do the same.
10. Endeavor to put in all small grain in the best condition possible, that the grain may have a good chance to grow and get the start of the thistle; and if unable to put grain in the ground in good condition, it will be better to let the land be idle and plow in summer, so as to kill the thistle.

RAILROADS.

The large and important subject of railroads, their employes, shipments, wages, etc, is one naturally coming within the purview of the operations of the bureau, and I made effort to collect information covering these topics, but not with sufficient success to permit of an intelligent report thereon, owing to the fact that the railway corporations were called upon by the railway commission for similar information, having furnished which, generally objected to going to the trouble of supplying two departments of the state with practically the same statistics. I then applied to the Board of Railway Commissioners for these statistics, and they were furnished, in the form required for its use, but which was not fitted for the purposes of this report, and information upon this subject must be sought in the report of that body.

All of which is respectfully submitted,

WALTER McKAY,
Commissioner.

LEAD, October 25th, 1894.

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